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CONTENTS

Page

The Automatic Coupling of Railway Vehicles 585

The Technical Engineering Service of an American Trade Union, by Solomon BARKIN 609

Reports and Enquiries

Conditions of Work of Fire Fighting Services : Hours of Duty, Rest Periods and Paid Holidays 637

Statistics 658

Unemployment and Employment 660

Cost of Living and Food Prices 669

Bibliography

I.L.O. Publications 678

Other Publications 679

Erratum 689

Vol. LXI

Contents 690

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INTERNATIONAL LABOUR REVIEW

VOL. LXI, No. 6 JUNE 1950

The Automatic Coupling of Railway Vehicles

Owing to the considerable number of fatal or very serious accidents that occur during the coupling of railway vehicles, the International Labour Organisation has been concerned with this problem since its early years. After the publication of a report in 1924 [1] *and the adoption of a resolution by the Conference in 1928, a tripartite committee was set up which appointed a special subcommittee to follow the question. Action by the Organisation was interrupted by the war, but is now to be resumed in pursuance of a recent decision of the Governing Body of the Office. An account of this action is given in the following pages, preceded by a brief description of the coupling systems in use, the risks they involve, illustrated by accident statistics, and the action taken by some countries.* [2]

TYPES OF COUPLING SYSTEMS

THE COUPLING of railway vehicles comprises not only the actual coupling operation but also the connection of brake-hoses, heating pipes and, in some cases, electric conduits. The connecting of the gangway bellows of passenger coaches and of some luggage vans is a subsidiary operation which is left out of account in the present survey. [3]

[1] INTERNATIONAL LABOUR OFFICE, Studies and Reports, Series F 2, No. 1: *Automatic Coupling and the Safety of Railway Workers* (Geneva, 1924).

[2] For fuller details on some points, see *International Safety Survey*, Vol. XXIV, No. 4, October-December 1948, pp. 121-128: "Automatic Coupling of Railway Vehicles", by F. STRAUSS.

[3] This operation is generally carried out while the vehicles are stationary, and the accidents it causes are less frequent and less serious than those due to coupling or connecting operations proper. It would nevertheless be desirable to make this operation, too, automatic.

There are three systems of coupling railway vehicles: the European system, in which all operations are done by hand; the semi-automatic system (incorrectly called automatic) which is used principally in North America, and under which only the actual coupling of the vehicles is automatic, the other operations being done by hand; and the completely automatic system, which does not necessitate the presence of a shunter between the vehicles at any time. It is this last system that the International Railway Union[1] recommends if the coupling system at present used in Europe is changed.

The European Coupling System

Characteristics.

The European coupling system comprises a buffer arrangement, consisting of two side buffers, and a traction device, made up of a hook and two links joined by a turnbuckle or coupling screw. One of these links is hinged on to the base of the hook and the other hangs free. This traction device is situated on the centre line of the vehicle. In order to couple two vehicles, the free link of one is placed in the hook of the other, thus leaving a second link-screw-hook coupling in reserve in case the first should break.

A safety chain on one side and a safety hook on the other side of each coupling completes the buffer and traction system. At both ends of the vehicle there are also, for making the necessary connections, flexible pipes joined either to the air pipes of the brakes or to the heating pipes, and flexible conductors connected to the electric circuits.

Having completed the actual coupling and joined the flexible pipes and conductors, the railwayman passes the safety chain of each vehicle over the hook of the next.

This buffer and traction system is similar to that adopted by the railways about a hundred years ago. The buffer device was not even the result of special study. It simply came to be evolved because, in order to avoid impact between the frames,

[1] The International Railway Union is an association of most of the railway administrations in Europe and of some in Asia and Africa. Its headquarters are in Paris. The object of the Union is to standardise and improve conditions of organisation and practice on the railways from the point of view of international traffic.

the side girders were originally made to project beyond the end cross girder, and the ends of the girders were first covered with sheet iron, later protected by horsehair or felt, and finally fitted with springs. In this way side buffers were arrived at. The traction appliance was in the first place simply a chain. The play between the buffers was, however, too great, and this was remedied by bringing the vehicles nearer together by means of a turnbuckle until their buffers were in contact.

From this arose the coupling system which, in a strengthened form, is still in use, mainly in Europe.

Drawbacks.

Under the European system enough play must be left between the buffers of goods trains to allow of easier starting, and this not only causes jerking back and forth but also makes the braking of the trains more difficult. Furthermore, the starting of passenger trains, which must be close-coupled, is more difficult because the traction appliance cannot lengthen and hence the locomotive must set the whole train in motion simultaneously.

Every time that the European type of coupling is drawn taut, the tractive effort creates a risk of breakage, more particularly as the train starts and as it negotiates each rising incline and each curve. This risk is much greater with the European type of coupling than with other types.

Too much reliance must not be placed on the safety chains. It has been proved that the jerk which follows the breaking of a coupling in most cases also breaks the safety chain. There is of course a second coupling to replace the broken one, but interruption of traffic, with all that this involves, is none the less inevitable.

Under the present system the two turnbuckles and the two hooks weigh about 130 kilograms ; only 50 kilograms, however, are actually used to transmit the tractive effort, the remainder hanging free. If, in order to enable vehicles of greater capacity to be employed, an attempt is made to use the 130 kilograms of material for making a single coupling of the present type, the resulting appliance would be useless because of its excessive weight. It could not be operated by one man.

Railway operation is also restricted to some extent by the way in which the present system functions on stretches which

are not straight, and notably on sharp curves. This is a disadvantage additional to the weakness of the traction device just mentioned.

The impact of two vehicles on curves is absorbed only by the springs of the inside buffer, the springs of the outer buffer being scarcely brought into play. These impacts and the tractive effort cause abnormal stresses, jamming of the different parts and excessive friction, all of which are very injurious not only to the buffer and traction system but also to the underframes, wheels and rails. The result is an increase in the possibility of derailment and in the cost of upkeep, since the movements are constantly repeated.

Finally, the pulling in all directions has adverse effects on the comfort of passengers and on the condition of the goods carried.

Semi-Automatic Coupling System

Characteristics.

The American coupling system, which is the oldest of this type, may be considered as partly automatic. The Australian, Japanese, Russian and other systems work on similar lines.

The American coupling consists of a central appliance which acts both as a buffer and as a traction device. Each coupling head is mounted on springs. If the couplings of two vehicles with ends facing each other are not yet in contact, and one vehicle is pushed against the other, the two coupling heads engage and lock into each other. For purposes of uncoupling, all that is needed is to pull a cord (the shunter remaining outside the space between the two vehicles) and to push the two vehicles apart. They separate easily and the two coupling devices fall back into position for coupling.

This description relates only to the operations of coupling and uncoupling properly so called. For the purpose of connecting or disconnecting the brake-hoses, heating pipes and, in some cases, electric conduits, the shunter is obliged to get between the vehicles. This type of coupling is not, therefore, the ideal solution ; nevertheless, it does represent a considerable technical advance over the European type.

Advantages.

The semi-automatic coupling has evident advantages from the twofold point of view of economy (increased capacity, relatively low cost of installation, reduction of staff and material needed) and safety.

Various studies have shown that the utilisation of trains could be considerably improved by increasing the tonnage of the wagons. By this means the dead weight per ton carried could be lessened.

The European coupling system tends to restrict the tonnage of trains. The automatic systems, which are much stronger, allow the tonnage to be greatly increased, sometimes even doubled. It has been calculated that, with high-capacity wagons, a train 522 metres long could easily carry a load of 2,750 tons, while with 20-ton wagons a train 520 metres long can only carry 1,140 tons. The length of trains has an important bearing on the size of stations, and the adoption of automatic couplings would enable existing estimates for the extension of permanent way and buildings to be cut down.

Using the same quantity of material, it would be possible to replace traction devices and buffers of the European type by automatic couplings which would be much stronger. Further, the two side girders on present vehicles could be replaced by a central girder which would allow of higher tonnage.

The traction and buffer devices of the European system consist of about a hundred pieces. Automatic coupling appliances have many less, so that the cost of maintenance as well as of installation is lower. In the first place, only certain large parts of the coupling have to be inspected, instead of many small pieces. Secondly, there is less friction and therefore less wear. Lastly, the cost of maintenance of the vehicle as a whole is lower; with an automatic coupling system, the vehicles are subjected to more regular stresses and there is less risk of parts becoming loose and damaged.

German railway statistics show that a wagon is in actual use during 20 per cent. of its life and is being loaded and unloaded during 26 per cent., the remaining 54 per cent. being time lost in shunting and standing in sidings. An estimate based on a special study of the question shows that this lost time

could be reduced by 7½ per cent. through the introduction of automatic couplings. This does not seem too high ; it would correspond to a total gain of 4 per cent. and would, for instance, allow a wagon park of 500,000 to be reduced by 20,000, which represents a considerable saving.

Some years ago a study of the question of reducing the number of locomotives was carried out in France. [1] The special committee which dealt with the matter estimated that the introduction of automatic couplings would allow the number of shunting locomotives to be reduced by half, and this would also make possible a saving on staff. Automatic coupling, furthermore, enables the number of men coupling and shunting vehicles to be reduced, even if only the principal marshalling yards are considered.

The reduction of the number of locomotives necessarily means a smaller expenditure on coal, electricity or liquid fuels. The reduction in maintenance costs previously mentioned results in a decreased use of lubricants, steel for spare parts, etc.

Lastly, the automatic coupling system reduces the risk of telescoping in the event of derailment. The material damage is thus lessened and the amount of compensation for damage to property and personal injuries is therefore much lower. Moreover, the system should result in fewer accidents due to breakage of couplings. Such breakages are still quite frequent, especially on goods trains.

It falls outside the limited scope of the present survey to make an estimate of the reductions in compensation paid for accidents to persons. However, it is certain that, as some of the accidents which are due to the European coupling system would be eliminated through the adoption of a partly or entirely automatic system, railways using the automatic system would show a considerable saving on such payments.

Entirely Automatic Coupling System

Characteristics.

The entirely automatic coupling system resembles the semi-automatic system described above, so far as the actual

[1] Cf. CHAMBRE DES DÉPUTÉS, 1928, Report No. 478 : *Rapport Brunet.*

operation of coupling is concerned. However, it also comprises devices for performing other operations automatically. Generally, the air and steam pipes, as well as the electric conduits, on one vehicle terminate in the coupling head at such points that at the moment of coupling they are exactly opposite the corresponding devices on the other vehicle. Connection is thus instantaneous and automatic.

Various completely automatic coupling systems have been evolved. However, the information published on them is not sufficiently detailed to allow all their possibilities to be assessed.

The International Railway Union has laid down the conditions of operation and strength which an ideal system of automatic coupling should fulfil, and has also urged that the necessary arrangements should be made so that during the whole transition period it may be possible to couple vehicles fitted with the European system to those which are being altered. Some adjustments will certainly have to be made to the completely automatic coupling devices if they are to satisfy the technical conditions laid down by the Union. The progress achieved during the last ten years seems likely to be a considerable help in this task. Furthermore, difficulties which might have hindered some inventors or builders twenty years ago have for the most part been removed, and the combining of various patents in order to arrive at a uniform system of completely automatic coupling appears to be easier today.

Advantages.

In addition to all the advantages of the semi-automatic system described above, the completely automatic system represents an advance in certain other respects.

In the first place, it results in considerable saving of time. Since all connections are instantaneous, shunting can be speeded up. Fewer wagons are necessary for running purposes because the time they are out of use is shorter. Shunting is quicker and fewer locomotives are therefore required for it; hence a reduction in the quantity of fuel or electricity and in the number of locomotive staff needed.

It is difficult to estimate exactly the reduction in shunting staff which would result from the introduction of a completely

automatic system. No example is available which would allow a comparison to be established. Suburban trains in certain capital cities have completely automatic coupling systems, but there are no marshalling yards where the work is organised for completely automatic coupling. Yet it is probably in such yards that the saving in staff would be greatest. It is, however, certain that completely automatic coupling would allow a reduction of staff through the almost total elimination of manual work and of the transmission of shunting signals.

A second additional advantage lies in the reduction in compensation payments for accidents to persons. In the United States, where the semi-automatic system is used, the number of accidents to shunting staff, as will be seen below, is still high. The introduction of completely automatic coupling would thus mean a substantial reduction in the amounts paid in compensation for such accidents. The extent of the reduction could be assessed on the basis of American statistics of coupling accidents.

The accident statistics presented below suggest, on the one hand, that it would be desirable to transform non-automatic systems into entirely automatic systems, and on the other hand, and above all, that action to eliminate accidents due to the European system of coupling is urgently required.

Risks Involved in Coupling and Uncoupling Work

Generally speaking, any railwayman who has to go between two railway vehicles exposes himself to a grave risk of accident. Under the European system, he cannot always wait until both wagons are completely stationary, one against the other, before passing between them. The speed at which work at the marshalling yards and depots has to be done owing to the large number of vehicles to be coupled and uncoupled often forces him to neglect his own safety. He is also frequently called upon to carry out these operations at dangerous points, near track appliances, ash pits, etc.

Accidents to shunters are generally grouped in three main classes, according as they occur (1) in coupling; (2) in uncoupling ; (3) in handling brake-hose and heating pipes or their stopcocks.

When coupling vehicles, the shunter may be injured by the side buffers as he steps onto the line between the vehicles or as he hitches the link of the turnbuckle to the traction hook. He may be struck by moving vehicles as he passes under the side buffers before or after coupling, or he may be hurt by goods loaded on the wagon or by a load falling from it.

When the vehicles are stationary, he may also be hurt, in the hands, arms or legs, during couplings, either by the flying of the turnbuckle knob or the coupling chains, or by knocking against the pin of the trunnion or the turnbuckle. He may also strain himself in tightening the turnbuckle.

Finally, whether the vehicles are stationary or moving, he may scrape against rough surfaces or burrs of coupling appliances, or fall or slip, or make a false step or get his foot caught in points or a guard-rail.

Similar accidents may occur during uncoupling.

In handling the brake-hose, heating pipes or their stopcocks and, in some cases, the electric conduits, the shunter does not in theory risk being hurt by the buffers because these are supposed to be already in contact with each other. The other risks, however, continue to exist, and in addition he may be scalded by steam jets, hurt by the flying of coupling pipes or electrocuted. This third class of accidents arises not only with the European coupling system but with any system of semi-automatic coupling.

In order to gauge the danger, it is necessary to follow closely — and not merely from a platform — the work of the couplers, uncouplers and gang workers. The railway administrations realise the various dangers and have drawn up very detailed safety rules which ought to reduce the number of accidents. Unfortunately, it is often difficult for the staff to maintain the required speed in making up trains without violating these rules. Strict observance would, in fact, often result in congesting the tracks.

The following are examples of clauses, taken at random, in various rules : the coupler is forbidden to stand between the buffers of a stationary wagon while awaiting the approach of the moving set of wagons ; wagons must not be set moving again before the man coupling them has come out from between the buffers ; it is forbidden to go in front of a moving vehicle or to accompany it along the track ; it is forbidden to lean over

the turnbuckles or to lean on them in order to couple or uncouple the safety chains, communication devices, etc.; the shunter must carry out the coupling operation with his elbows held close to his body; he must not come out from between the vehicles which he has just coupled before they are completely stationary, and so forth.

These regulations show clearly that the smallest lapse or slightest distraction may have very serious consequences for the coupler. It has not been possible to increase safety in this type of work by installing protective devices such as are fitted on dangerous machines in industrial and other establishments.

Accident Statistics

Accidents with the European System.

The International Railway Union has suggested to the various European railway administrations that they should compile detailed accident statistics. Owing to the different methods employed for the notification of accidents, it has not been easy to establish internationally comparable statistics. The result is that at present the only international figures published relate to fatal accidents.

Statistics for the years 1945, 1946 and 1947, compiled for the International Railway Union and relating only to the railway administrations belonging to the Union, have been used for the preparation of table I opposite.

These statistics, besides being incomplete, are liable to give a distorted idea of the real situation, since the rates are based on the total number of persons employed by the railways concerned. What is needed are the fatal accident rates based only on the number of men actually employed on coupling and uncoupling vehicles during each year, and more particularly on the small teams of couplers engaged solely in shunting vehicles. Such rates would certainly be very high; as far as the Office is aware, they have not so far been published.

The statistics given in table I are supplemented below by information provided by the French National Railway Company and the Swiss Federal Railways, both of which

TABLE I. FATAL COUPLING ACCIDENTS IN VARIOUS EUROPEAN COUNTRIES, 1945-1947

Country	Year	Total labour force, excluding workshop staff	Fatal coupling accidents	
			Number of men killed	Rate per 10,000 employed
Austria	1946	90,577	6	0.662
	1947	74,821	4	0.534
Belgium	1945	64,177	9	1.400
	1946	67,771	10	1.470
	1947	64,956	10	1.539
Czechoslovakia	1945	184,519	10	0.541
	1946	184,054	20	1.086
	1947	151,091	13	0.860
Denmark	1945	23,748	6	2.526
	1946	24,000	3	1.250
	1947	23,985	4	1.667
Finland	1945	21,517	5	2.323
	1947	31,965	2	0.625
France	1945	418,412	25	0.597
	1946	428,792	29	0.676
	1947	417,326	24	0.575
Germany (American and British zones)	1946	371,665	23	0.618
	1947	459,775 [1]	46 [1]	1.000
Italy	1945	186,570	2	0.107
	1946	185,923	7	0.376
	1947	177,531	10	0.563
Netherlands	1945	37,245	2	0.536
	1946	36,953	2	0.541
Norway	1945	23,500	1	0.425
	1946	22,434	–	–
	1947	22,211	3	1.350
Portugal	1947	20,849	2	0.959
Rumania	1945	25,274	4	1.581
	1946	32,398	9	2.777
Sweden	1945	48,827	2	0.490
	1946	53,482	5	0.934
	1947	55,982	5	0.893
Switzerland	1945	24,994	1	0.370
	1946	28,388	3 [2]	1.056
	1947	30,076	4 [2]	1.329
Turkey	1945	35,997	4	1.111
	1946	36,524	–	–
	1947	33,596	3	0.892
United Kingdom	1945	444,123 [3]	4	0.090
	1946	465,448 [3]	8	0.171
	1947	471,056 [3]	5	0.106

[1] Including the French zone. [2] Died within 24 hours. [3] Estimated figure.

use the European coupling system. These two countries were chosen by way of illustration, the first because it has a large network of railways the working of which involves almost every conceivable coupling operation, and the second because of its importance as a transit country for complete trains.

The following table has been prepared from information furnished by the French National Railways. It gives the total number of accidents during the last three years, showing the departments to which the victims belonged.

TABLE II. NUMBER OF COUPLING ACCIDENTS ON THE FRENCH NATIONAL RAILWAYS, 1947-1949

Department	Year		
	1947	1948	1949
Operating	1,779	1,704	1,143
Rolling stock and traffic.	198	210	152
Permanent way and buildings	46	28	21
Canteen, etc.	—	—	1
Total . . .	2,023	1,942	1,317

The total labour force of the French railways in 1947 was about 480,000, so that the accident rate in that year (calculated in the same way as the fatal accident rates shown for France in table I) was 42 per 10,000. If only the 170,000 or so railwaymen who were employed in the operating department are taken into consideration, the figure of 1,779 accidents in 1947 gives a rate of 103 per 10,000, or two and a half times the general rate.

As not all operating staff are required to do coupling work, it is clear that the accident rate calculated only for men regularly employed on such work would be well over 103 per 10,000. Unfortunately the Office has no precise figures on which such a calculation could be based.

Tables III and IV have been prepared from the very detailed statistics of the Swiss Federal Railways.

TABLE III. COUPLING ACCIDENTS ON THE SWISS FEDERAL RAILWAYS, 1944-1948

Year and result of accident	No. of accidents			
	Coupling operations proper	Uncoupling operations proper	Coupling of brake and heating pipes, etc.[1]	Total
1944				
Injury	30	10	—	40
Permanent disablement	3	—	—	3
Death	4	—	—	4
Total	37	10	—	47
1945				
Injury	46	6	—	52
Permanent disablement	3	1	—	4
Death	1	—	—	1
Total	50	7	—	57
1946				
Injury	42	7	2	51
Permanent disablement	3	—	—	3
Death	3	—	—	3
Total	48	7	2	57
1947				
Injury	48	3	—	51
Permanent disablement	1	—	—	1
Death	4	—	—	4
Total	53	3	—	56
1948				
Injury	34	3	1	38
Permanent disablement	2	—	—	2
Death	—	—	—	—
Total	36	3	1	40

[1] Accidents due to high-tension current (electrical heating system) are not included.

TABLE IV. RATE OF COUPLING ACCIDENTS TO SHUNTERS ON THE SWISS FEDERAL RAILWAYS, 1944-1948

Year	No. of shunters	Accident rate per 10,000 shunters
1944	2,000	190
1945	2,400	138
1946	2,500	164
1947	2,650	173
1948	2,780	129

The total operating staff remained at 8.8 times the number of shunters during the period 1945-1948. Thus the coupling accident rate for shunters alone was nearly nine times as high as that for the operating staff as a whole.

Accidents with the Semi-Automatic System.

The following figures for the United States are based on statistics published by the Interstate Commerce Commission.

TABLE V. COUPLING ACCIDENTS IN THE UNITED STATES, 1947-1949

Year and result of accident	Number of coupling accidents		Other train service accidents
	Coupling and uncoupling of vehicles	Coupling and uncoupling of air hose, etc.	
1947			
Injury	741	342	28,062
Death	19	12	3,913
1948			
Injury	688	326	24,684
Death	34	7	3,531
1949			
Injury	531	237	18,835
Death	14	5	3,144

Although details as to the conditions in which the accidents occurred are not available, the table shows that the semi-automatic coupling system entails certain risks.

Taken together, the above data give a rough idea of the seriousness of the risks. However, for effective action against them, statistics relating to clearly defined categories of railwaymen may be held to be essential. Such figures could in fact be established, since the railway administrations possess sufficiently detailed data, in the shape of the notifications of accidents they receive.

In some countries, however, the number and seriousness of coupling accidents have roused public opinion, and the changes made in coupling systems have been based partly on humanitarian considerations.

Action Undertaken in Different Countries

United States

The United States was the first country to study the question and to introduce a semi-automatic coupling system. As early as 1850, the general public began to take an interest, and a strong movement arose in favour of action by the federal Government to make it compulsory for the railway companies to introduce automatic coupling. The constructors of railway vehicles, who had in 1867 formed the Master Car Builders' Association, accordingly decided to set up a committee to experiment with automatic coupling devices. The experiments were completed in 1887, and in the same year the committee issued a comprehensive report recommending the general adoption of the Janney system.[1]

In 1883 the Westinghouse Company began a series of demonstrations in most of the northern States. A train composed of fifty cars fitted with the new continuous automatic brake and an automatic coupling system proved to be excellent propaganda for this system.

From 1887 onwards the various railway administrations began converting their vehicles of their own accord. Progress in this direction, however, was very slow at first, and from 1887 to 1892 the M.C.B. automatic coupling device was fitted on only some 15 per cent. of all rolling stock.

Later, under the pressure of public opinion, the federal Government introduced a Bill, which was passed on 2 March 1893 under the title of the Brake and Coupler Act, making the general introduction of automatic coupling compulsory. The conversion of all rolling stock was to be completed by 1 January 1898 [2] at the latest and a fine of 100 dollars was imposed for any contravention.

By 1911 there were not less than thirty-one different systems of automatic coupling in the United States, though the differences were not too great to prevent the coupling of any two vehicles. The Master Car Builders' Association set up

[1] Later known as the M.C.B. system (the initials of the Association).

[2] Subsequently extended to 1 August 1900.

in that year a second committee to negotiate with the various patent holders and to standardise couplings.

In two years the committee, working in close collaboration with the railwaymen's unions, carried out a large number of tests. The result was the designing of a single type, the general adoption of which was recommended in 1916 in an agreement concluded among the various railway administrations. This type, known as the A.A.R.[1] coupling, is at present fitted on more than three and a half million railway vehicles in the United States.

The first automatic coupling (the Janney or M.C.B. coupling), from which the present model was derived, was introduced in the United States before the continuous brake; this may explain the non-automatic nature of this coupling in regard to the brake-hose, the heating tubes and the electric transmission system.

Japan

The first proposals for the introduction of automatic coupling in Japan were made shortly after the nationalisation of the railways in 1906. The question was investigated for more than ten years, and it was only in 1918 that the Government finally decided to introduce automatic coupling.

In order to carry out the changeover with as little dislocation of traffic as possible, the Ministry of Railways decided that all preparatory work (conversion of underframes, drilling of the necessary holes, suspension of the new couplings under the vehicles, training of workers who were to carry out the actual changeover, etc.) should be done as and when the vehicles were sent to the workshops in the normal course for repair or overhaul.

The preparatory work began in 1918 and was carried out in three stages. During the first, all necessary modifications were made to the underframes; during the second, the new couplings were provisionally attached under the ends of all goods wagons; during the third, wagon underframes which had been altered were thoroughly overhauled.

By the spring of 1925 the preparatory work was finished and the Ministry decided that all couplings were to be changed

[1] The initials of the American Association of Railroads.

over on a single day—17 July 1925.[1] The two preceding days of July are Buddhist holidays, and the Ministry considered that there would be little traffic on the day after these feast days.

With the exception of passenger trains, on the most important of which the new couplings had already been fitted, all rolling stock was assembled during the night of 16-17 July in 223 yards in order to be changed over.[2] In the course of twenty-four hours 41,661 goods wagons were fitted with the new couplings; the number of workers employed on the job was 12,151. Altogether, new couplings were fitted on a total of 3,205 locomotives, 8,544 passenger coaches and 51,552 goods wagons.

The total cost of the changeover was 24,566,000 yen for 63,942 vehicles, or 384 yen per vehicle. At that time the yen was worth 41.04 cents, so that the average cost was 157.50 dollars. It must be remembered that labour is comparatively cheap in Japan and that prices and wages are higher today than they were in 1925. The coupling system adopted by the Japanese railways is of the American type.

It is noteworthy that the changeover was carried out without recourse to a transitional coupling and that the conversion was completed in a single day. The preliminary work had lasted ten years.

U.S.S.R.

About 1925, the U.S.S.R. railway authorities considered that it was possible to introduce the automatic system of coupling with a central buffer throughout the country. They decided to equip the underframes of all new vehicles and those undergoing important repairs in such a way that the central buffer coupling system could be fitted later. The war disorganised the original plans, but according to official information 60 per cent. of all vehicles are at present fitted with automatic couplings.

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[1] The automatic coupling system had been introduced on the railways on the island of Hokkaido (district of Sapporo) at the end of 1922.

[2] In one district (Kyushu) the changeover was carried out on 20 July.

Other Countries

Several railway companies have adopted, for newly constructed or private lines, coupling systems most of which are only semi-automatic, while the rest—as pointed out at the beginning of this study—do not comply in full with the conditions laid down by the International Railway Union.

The following table gives an idea of the situation at the time of the most recent study made by the I.L.O.

TABLE VI. EXTENT OF UTILISATION OF AUTOMATIC COUPLINGS IN CERTAIN COUNTRIES IN 1936

Country	Network using or vehicles fitted with automatic couplings
Australia	All lines
Belgium	Some sets of rolling stock
Canada	All lines
France	All passenger vehicles on Paris suburban lines and certain rail cars *(automotrices)*
Hungary	Some vehicles
India	All lines
Netherlands	Some sets of rolling stock
Portugal (Mozambique)	All lines
Switzerland	Narrow-gauge lines
Union of South Africa	All lines
United Kingdom	All London Passenger Transport Board lines and some passenger coaches on other lines

Automatic coupling systems are also in use in the Argentine Republic, Chile, Jamaica, Mexico and other countries, but it is difficult to state to what extent.

International Action for the Abolition of the European Type of Coupling

All the measures described above have been national in scale. In view of the particular dangers presented by the European coupling system, a campaign was begun many years ago in order to bring about the abolition of this system of coupling.

As early as 1905, transport workers affirmed, at the international congress they held in Milan, the necessity of abolishing the European type of coupling.

The question was also taken up before the first world war by railway administrations in France, Germany and Italy, which soon realised that, with the frequent exchange of railway vehicles between the various European networks, international agreement was indispensable. They continued, however, with their separate tests; no important agreements were reached among the different builders and no really satisfactory results were achieved.

The question was brought up on an international as well as a humanitarian basis in 1923, at the Fifth Session of the International Labour Conference, when a resolution was adopted requesting the Governing Body of the International Labour Office to study it. In pursuance of this resolution the Governing Body decided in July 1924 to instruct the Office to make an investigation into the problem of automatic coupling.

In May 1925 the Office was invited to attend a meeting of the Committee on Technical Questions of the International Railway Union held at Munich, to which it submitted the abovementioned report on *Automatic Coupling and the Safety of Railway Workers*.[1] In November 1926 the Union set up a special committee on automatic coupling, which first met at Stockholm in June 1927. The workers' organisations were pressing for more thorough study of the problem and for its speedy solution, and in 1928 the International Labour Conference, having taken note of the information furnished by the Union, asked that body to continue its studies on the subject, and at the same time requested the Governing Body to appoint a tripartite committee of twenty-one members to study the problem.

This Tripartite Committee on Automatic Coupling met at Geneva on 2 June 1930. It took note of the work of the special subcommittee of the International Railway Union, which had defined the provisional conditions to be fulfilled by automatic couplings and had drafted instructions for the testing of automatic coupling. It also considered a report

[1] See above, p. 585, footnote 1.

prepared by the International Labour Office reviewing the different aspects of the problem. While recognising the economic advantages that would result from the proposed changeover, the Committee did not study them in detail, but preferred to deal mainly with the purely social aspects of the problem.

On 2 February 1931 the Tripartite Committee held a second meeting, to study the results of the investigation undertaken by the International Railway Union, and reached two principal conclusions:

(1) The adoption of a uniform automatic coupling in countries where screw coupling was in general use would contribute to the prevention of accidents.

(2) It was technically possible to devise such a coupling.

The Committee therefore advised railway administrations to have new vehicles constructed in such a way that they could be adapted for automatic coupling. It also suggested that a subcommittee should be set up to study the question more closely.

The Governing Body of the Office approved the suggestions of the Committee.

In the meantime, the International Railway Union was continuing its study of the technical conditions to be satisfied by European automatic coupling and its preparation of instructions for practical tests. With regard to the presentation and testing of coupling devices, it decided that the device should first be submitted to a railway administration affiliated with the Union, which would determine on its own responsibility whether the device fulfilled the conditions laid down by the Union, in which case it was to make a first test on its own system.

If this test proved satisfactory, the administration in question could then submit the device to the special committee of the Union for testing. For this purpose, it was to place 537 vehicles fitted with the proposed coupling at the disposal of three different railway systems (France, Germany and Italy, and Poland if the railway administration of one of these three countries itself wished to submit a device).

Proposed International Fund

At its first meeting, in February 1932, the Subcommittee on Automatic Coupling set up by the I.L.O. recognised that railway administrations wishing to propose coupling devices for testing would be faced with expenses which they would find it difficult to meet in the then existing financial and economic conditions, and that this tended to paralyse any initiative in the matter. In view of these difficulties it therefore approved a proposal in favour of setting up an international fund to finance the testing of couplings during actual railway operations, and asked the International Labour Office to study the possibility of constituting such a fund.

The Director of the Office immediately began negotiations for this purpose in various countries and with the competent bodies of the League of Nations Secretariat.

The second meeting of the Subcommittee, held at Geneva on 8 October 1932, considered a memorandum on the possibility of creating an international fund to finance the testing of couplings and a draft administrative agreement for the formation and use of such a fund, both prepared by the Office, and a note presented by the International Railway Union on tests already carried out by some of its affiliated administrations.

The draft administrative agreement, as adopted by the Subcommittee, provided for the constitution of a fund of six million Swiss francs to finance the testing of coupling devices, to which all European States would contribute. Administration of the fund was to be entrusted to a body of seven members, composed of three representatives of the I.L.O. Governing Body, two of the International Railway Union and two of Governments which had shared in the constitution of the fund. The draft agreement also contained details concerning the tests to be carried out and the reports to be established by the Union and the I.L.O. respectively.

This draft agreement was submitted to the Governing Body of the International Labour Office and the Board of Management of the International Railway Union. The Governing Body adopted it at its 60th Session (Madrid, October 1932) by eleven votes to one ; and in a letter dated

8 November 1932, the General Secretariat of the Union informed the Office that the Board of Management agreed to all the articles concerning the participation of representatives of the Union.

Having thus been adopted by the two international institutions, the draft agreement was submitted by the Office to the Governments of the countries most directly concerned[1] with a view to obtaining their consent to payment of a contribution for the constitution of the fund. These countries were Belgium, Denmark, France, Germany, Italy, the Netherlands, Spain, Sweden and Switzerland.

In reply, one of the nine countries—Italy—stated that it was unconditionally prepared to contribute. France informed the Office that it would pay its quota, provided that the Governments of the States with which it had direct railway connections also conformed to the agreement.[2] Switzerland undertook in principle to contribute to the setting up of the fund, but on condition that the countries called on to pay the largest contributions replied favourably. Denmark stated that it would pay its quota if the agreement of the other States was secured. Belgium, Germany, the Netherlands, Spain and Sweden postponed their decision or else stated that it was for the time being impossible for them to contribute to the setting up of the fund.

The Subcommittee took note at its third session (Geneva, 28 April 1936) of the fact that it appeared to be impossible to constitute the fund quickly, and it therefore proposed that a questionnaire should be sent to Governments in order to establish the exact situation with regard to the introduction of automatic couplings. This suggestion was approved by the Governing Body, which authorised the sending of a questionnaire not only to European Governments but also, in a limited form, to certain extra-European countries. The result of the enquiry so made was to show, in the first place, that in many countries the railway companies were using several types of automatic coupling in national traffic and were not concerned

[1] Those with large railway systems or well-developed metallurgical and engineering industries.

[2] One such country, however—the United Kingdom—while not objecting to the organisation of automatic coupling tests, let it be known that it did not intend to contribute to the expenses involved.

to arrive at a uniform type, and secondly, that no railway administration was intending, at that time, to put forward an automatic coupling device to undergo the proposed tests.

Post-War Resumption of Study of the Question

Very soon after the end of the war, the I.L.O. Inland Transport Committee recommended at its first session (London, 1945) that the study of the question of automatic coupling should be reopened. At its 98th Session (Montreal, 1946) the Governing Body decided to re-establish the Subcommittee on Automatic Coupling.

Soon after, the European Central Inland Transport Organisation (which had been set up in September 1945) urged the International Railway Union to request the various railway systems to consider fitting vehicles with automatic couplings when they had occasion to reconstitute their rolling stock, or at least to equip them for being so fitted at a later date. Unfortunately, these suggestions could not be complied with, partly owing to the shortage of steel.

The question was not abandoned after the dissolution of the Organisation. The Inland Transport Committee of the Economic Commission for Europe, on 29 October 1948, requested the International Railway Union to resume the study of the problem of automatic coupling. On 7 March 1950, the Union submitted a report, which in effect reproduced the memorandum prepared in 1936 by the German railways, after modification of the original figures by the application of certain coefficients. The Railway Transport Subcommittee of the Economic Commission for Europe, at a meeting held at Geneva in March 1950, expressed the view that the study of the question should be resumed in the light of the new economic conditions, and asked the International Labour Office to undertake this work. In compliance with this request the Director-General of the International Labour Office recently decided to submit the question for study to the newly reconstituted Subcommittee on Automatic Coupling.

Conclusions

The foregoing survey will have shown that the International Labour Office has given serious consideration to the question of automatic coupling. As early as 1931 it reached the conclusion, mentioned above, that from the humanitarian point of view it was necessary, and from the technical point of view it was possible, to replace the European type of coupling by an automatic device.

At first sight there would appear to be no need to go back on that conclusion. However, it has been pointed out that the frequency and seriousness of accidents arising from coupling operations could and should be determined with reference to well-defined groups of railway workers.

At their forthcoming meeting, the members of the I.L.O. Subcommittee on Automatic Coupling will be called on for their comments on the report submitted by the International Railway Union to the Subcommittee of the Economic Commission for Europe. They will be in a position to re-examine the suggestions made before the war by the I.L.O. Committee on Automatic Coupling and, in particular, to state whether they consider it useful to make a fresh attempt to collect the necessary funds for financing tests with a view to the adoption of a single type of automatic coupling. In this way such railway administrations as wish to introduce an automatic coupling system on some of their lines without further delay would have the assurance that the system they adopt would be the same as that likely to be introduced later on in Europe on a general basis.

The Technical Engineering Service of an American Trade Union

by

Solomon BARKIN

Director of Research, Textile Workers Union of America

After sketching the history of the trade union attitude towards scientific management in the United States, and towards the engineering experts who assist in developing its techniques, the following article explains how trade unions are tending more and more to employ technicians in their own behalf and illustrates the work of their engineering units by an account of the technical service which the author has built up in his own union.

GENERAL SURVEY

OF all trade union staff services in the United States, that handling industrial engineering problems has been the slowest to develop. Only three trade unions maintain national staffs for this purpose; a number have regional consultants or staffs.[1] It is probable that, as existing units become more widely known, these services will grow in importance. They will move forward as aids in the routine collective bargaining process; as interpreters of the developing industrial technology for the unions and of union attitudes for the employers, the public and the universities; as instructors of the union staff in handling technical problems; and as advisers to national union policy makers.

[1] The three national unions are the International Ladies Garment Workers Union, A.F.L.; the Textile Workers Union of America, C.I.O.; and the United Automobile Workers of America, C.I.O.

Reasons for the Delayed Appearance of Union Technical Services

The United States trade unions for the greater part of their history have had no use for, and in fact have feared, the engineering approach to work problems in the plant. Until recently, collective bargaining was carried on for the most part in industries with which the trade union leader had intimate personal knowledge. Plants were small; techniques of production were relatively uniform. Union standards respecting rates of pay and conditions of employment were usually negotiated on an area-wide basis. Employers in these industries also tended to observe established area practices as to job duties and assignments; changes in technology or methods of manufacture were infrequent. Only major changes in machinery and methods came up for joint consideration, and their introduction was controlled by general rules worked out for the entire industry or area.[1] Practical men, relying on experience and the rule of thumb, could handle the controversies arising in collective bargaining.

In the current era of mass trade unionism, there has similarly been little need for extensive engineering counsel. The unions have been primarily concerned with establishing basic terms of employment rather than with controls over shop or production practices. An adviser on industrial engineering problems has not been necessary in negotiating a basic wage schedule or general wage increases or even improvements in so-called fringe benefits (such as holiday and vacation payments, Christmas bonuses, employer's social security contributions, etc.).

Moreover, industry during the last fifteen years has generally been prosperous enough to meet labour's recurrent economic demands. Trade unions, therefore, have found little need to concern themselves with the adequacy of managerial performance. If anything, labour's common attitude has been that management has been too aggressive in promoting efficiency and frequently too indifferent to the effect of job changes on the workers.

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[1] Cf. Sumner H. SLICHTER: *Union Policies and Industrial Management* (Washington, Brookings Institution, 1941), Chapters X and XI. See also Solomon BARKIN: "Industrial Union Wage Policies", in *Plan Age* (Washington, D.C.), Vol. 6, No. 1, January 1940, p. 3.

Besides feeling little need for technical services of their own, the trade unions have been suspicious of, and opposed to, the industrial engineer and the tools of " scientific management ". This antagonism stemmed in part from the fact that modern industrial engineering techniques gained sway in an era when unionism, particularly craft unionism, was on the defensive. During the first fifteen years of the century large employers and employer associations destroyed trade unions in the steel industry, the cornerstone of modern mass production, in the foundry and machinery industry, and in the meat packing industry. Unions were liquidated in the smaller communities and curbed in the larger.[1] The employers who spearheaded the anti-union drives were also leading advocates of scientific management. Their experience provided the raw material for public discussion of the achievements of scientific management, and they set the pattern for its practitioners.

Thus organised labour, from the start, identified scientific management with anti-unionism, and resisted the whole idea. But the unions for the most part failed to prevent the introduction of the new techniques, and therefore sought to discredit them by bitter public attacks. Scientific management was labelled a rationalisation of anti-unionism and a subversion of the public interest. It was described as a monster which put workers at the employers' mercy and stripped them of their principal bargaining weapon—skill. The unions argued that wage incentive systems based on time study pitted workers against each other in an inhuman and suicidal contest; and that these methods meant endless industrial changes, unstabilised industry, unemployment and lower earnings.

Further, the unions insisted that time and motion studies were neither scientific nor fair in setting tasks or fixing rates, but merely expressed mathematically the wishes and opinions of employers. They charged that managements, in administering these techniques, made no pretence of following a scientific attitude [2], and they therefore asked for public condemnation of the entire programme.

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[1] Cf. Selig PERLMAN and Philip TAFT: *History of Labor in the United States, 1896-1932* (New York, Macmillan Company, 1935), pp. 92-149.

[2] Cf. Robert Franklin HOXIE: *Trade Unionism in the United States* (New York, D. Appleton & Company, 1920), pp. 326-348.

The climax in labour's general campaign against scientific management was the passage of the " anti-stop-watch " rider to the Military Appropriations Act in 1915, which prohibited the use of appropriations for the " salary or pay of any officer . . . or other person while making . . . a time study of any job of such employee ".[1]

This conflict between labour and management abated during the first world war, but was rekindled by the reopening of the anti-union open-shop movement in 1921. Individual leaders in the movement for scientific management were again identified with the anti-union drive. Only a handful of engineers sought to adjust the new managerial techniques to trade union aspirations.[2]

During the 'twenties, " advanced " employers generally combined the use of industrial engineering techniques with psychological testing practices, welfare programmes and company unions, a combination that made union leaders even more suspicious of all management techniques. " Welfare capitalism ", as this pattern was called, was openly criticised, particularly on the grounds that the accelerated pace of technological changes brought workers few if any benefits, relegated them at the age of forty to the " scrap heap " and, finally, ushered in a depression.

The suspicion and hatred felt for these managerial tools were so deepseated that when workers by the million organised trade unions under the ægis of Government protection, they immediately wreaked their vengeance on them. Wherever possible, they scrapped time studies, wage incentives, psychological and medical tests, and merit rating of workers. The national textile strike of 1934 was a protest against increased work assignments resulting from the application of the techniques of scientific management. Workers in the automobile parts, Pacific coast paper, railroad and other industries forced employers to give up wage incentive plans. Time study men

[1] U.S. HOUSE OF REPRESENTATIVES, documents H.R. 20347, 4 March 1915, and H.R. 20975, 4 March 1915.

[2] Cf. John R. COMMONS : " Organized Labor's Attitude Toward Industrial Efficiency ", in *American Economic Review* (Ithaca, N.Y.), Vol. 1, 1911, p. 463 ; C. B. THOMPSON : " The Relation of Scientific Management to the Wage Problem ", in *Journal of Political Economy* (New York), Vol. 21, 1913, p. 630 ; and Morris Llewellyn COOKE : " Preface ", in *Annals of the American Academy of Political and Social Science* (Philadelphia) : " Labor, Management and Production ", Vol. 91, September 1920, pp. vii-ix.

were personally attacked in some plants. Occupational wage differentials developed by means of job analysis and evaluation were superseded both by higher minimum plant rates established by federal legislation and by job rates negotiated through collective bargaining.[1]

The leaders of both national and local trade unions could have little use for professional industrial engineering services which acknowledged the continued existence of scientific management at a time when they were bent on destroying it.

Factors Favouring Increased Union Interest in the Principles and Techniques of Scientific Management

Other developments in the United States trade union movement, however, tended to make it more amenable to the introduction of scientific management, and better acquainted with the labour techniques involved. Many industrial employers reorganised their operations in keeping with the new conception of research, standardisation, planning and application.[2] They came to consider the use of these methods as essential to the discharge of their managerial functions and therefore resisted, for the most part successfully, all attempts to prevent their use.

With the accumulation of actual experience under this new type of operation, many workers accommodated themselves to the techniques of scientific management and, in some cases, actually came to associate them with special advantages. Consequently, such workers were cool to the idea of scrapping the system. They did not view it as necessarily irreconcilable with the development of the trade union ; and, indeed, unions have been organised and have continued to grow in such plants. Many union leaders became interested in mastering the techniques in order to protect workers and to extend the benefits derived from their introduction.

Interest in scientific management also grew from the fact that many labour leaders learned of its contributions to over-all industrial efficiency during the first world war. They became

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[1] See the case of Dyers Engineers, Inc., petitioner, *versus* Commissioner of Internal Revenue, 10 Tax Court of the U.S., No. 163, 29 June 1948.

[2] Cf. E. H. ANDERSON : " The Meaning of Scientific Management ", in *Harvard Business Review* (New York), Vol. 28, November 1949, pp. 678-692.

aware of the opportunities for greater welfare opened by this new industrial philosophy. Samuel Gompers, President of the American Federation of Labor, declared at the end of the war that "the trade union movement welcomes . . . every device and readjustment that will make expended effort more valuable to humanity ".[1] He and others preached joint consultation between labour and management on these changes, as essential to their sound use.

This experience was not lost upon the leaders of the American Federation of Labor. In seeking to rebuild the trade union movement after the disastrous open-shop period of the early 'twenties, many of them espoused a philosophy of co-operation with management in the promotion of industrial efficiency and productivity. They hoped thereby to neutralise employer opposition to unionism and possibly to gain employer co-operation in building a constructive labour movement. In preparation for this new approach, the Federation revised its wage policy in 1925 to reflect the conclusion that the major sources of rising income and wages were higher productivity and the elimination of waste.[2] The Federation offered the co-operative programme in operation at the Baltimore and Ohio Railroad repair shops as a basic model for labour relations ; it also employed a consultant engineer to propagate these views.[3] Finally, it submitted this programme to the automobile and textile industries as a basis for organising their workers. But these offers were spurned and the drive failed.[4] The collapse of this effort checked union interest in a co-operative programme.

During the 'thirties, there was little reason to revive union interest in this approach. Organised labour was preoccupied with getting trade unions established and consolidated.

Union acceptance of positive co-operation with management in promoting production was revived during the second world war. Organised labour accepted the call for an all-out war effort. Its intensive dedication to this goal prompted its

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[1] Samuel GOMPERS : "The Workers and Production ", in *Annals of the American Academy of Political and Social Science, loc. cit.*, pp. x-xii.

[2] Cf. Lewis L. LORWIN : *The American Federation of Labor* (Washington, Brookings Institution, 1933), pp. 240-242 and 429-433.

[3] Cf. G. C. BROWN : "Scientific Management and Organized Labor Today ", in *American Review*, Vol. 4, May 1926, pp. 324-339.

[4] Cf. Lewis L. LORWIN, *op. cit.*, pp. 244-258.

condemnation of employers who held back from war production and were tardy in converting from the production of civilian goods. It urged wider application of the principles of scientific management for greater output. Its attitude to the specialised labour techniques in question also changed. Many unions which had previously fought them now accepted them. In some instances they even urged their extension. Still other unions were persuaded to endorse these techniques as a result of the Government's policy of allowing wage concessions in the form of job rate adjustments under a job evaluation programme; or of individual merit increases under wage systems fixing job rate ranges; or of higher compensation for increased output under wage incentive plans.

The special emphasis of scientific management on rising productivity as a basis for higher wages also increased union interest. Recent wage demands have been supported by abundant displays of evidence reflecting the rise in man-hour output at the job, plant, industry and national levels. The fact that the concept of scientific management supports the conclusion that productivity can be constantly advanced has made it more acceptable to the unions. The current view in some management circles that workers should share directly in the benefits of a rise in productivity has made labour more reasonable about the introduction of more efficient procedures, methods and machines. The high level of employment has also helped to moderate the fear of unemployment which previously inspired special resistance to increasing productivity and to the entire management approach.

The reconciliation of organised labour's views with those of the advocates of scientific management has been promoted by two other developments. First, scientific management early supported good working conditions as essential to efficient operation. The findings of many students in this field buttressed labour's demands for healthy and safe working conditions, good lighting, adequate ventilation and air conditioning. Secondly, a number of labour's views concerning wage structures, working rules and collective bargaining have been integrated into the labour techniques of scientific management. On occasion, unions have even accepted the entire system for the purpose of getting certain principles adopted. Job evaluation has at times been admitted because it offered

a wage structure built on job, rather than personal, rates, presenting a uniform and orderly array of rates and job descriptions. The assumption underlying the procedures for extrapolating job assignments and standards from time studies, namely, that each job should be provided with personal rest and fatigue allowances, has at times led to greater readiness to tolerate the entire technique. Organised labour has seen in it a basis on which to negotiate agreements on scheduled rest periods. High-task wage incentive systems [1] have been made attractive because they guarantee the day-work wage rate, provide protection against managerial failings and assure workers full benefit from their effort. Moreover, the drive to get at the facts in each case has been attractive to organised labour as providing a basis for constructive collective bargaining and narrowing the area of conflict.

The expanding knowledge of the contributions of scientific management to industrial productivity and efficiency has also prompted individual unions facing serious industrial problems, such as a contracting market or the declining competitive position of unionised plants, to propose that the employers in question should make a wider use of this approach in order to regain their positions. Like Justice Louis Brandeis in 1910, they have pointed out that careful research and planning can effect reductions in costs and develop new markets.[2] The unions in the needle trades have openly criticised some managements for their backwardness. They have urged them to introduce advanced engineering techniques to improve their competitive position.[3] In the textile industry, the union informed managements that the problems in New England " arise from the deficiencies of individual manufacturers who are showing lack of enterprise and who are refusing to build

[1] The following definition is taken from L. P. ALFORD and John R. BANGS (editors): *Production Handbook* (New York, Ronald Press Company, 1949), p. 1179: " *High task*, or 100 per cent. efficiency, is an amount of production derived through motion and/or time study which a normal operative can accomplish day after day without physical or mental impairment. It should be about two thirds of machine perfection."

[2] Cf. Josephine C. GOLDMARK: *Fatigue and Efficiency* (New York, Russell Sage Foundation, 1912), pp. 192-195; and Louis D. BRANDEIS: *Scientific Management and Railroads* (New York, 1913).

[3] Cf. Kurt BRAUN: *Union-Management Cooperation. Experience in the Clothing Industry* (Washington, Brookings Institution, 1947), pp. 159-184; and Sumner H. SLICHTER, *op. cit.*, Chapter XVII.

up through adequate modernisation of equipment, management, merchandising, research facilities, product development, and sales organisation, the types of enterprise required in this day and age in the industry". It proposed that a State textile commission should be set up to make technical and economic studies which would "facilitate business judgment and solve current technical issues" and would promote the technical education of management and labour.[1]

These developments disclose wider acceptance by the unions of the scientific management approach to industrial operations, but not of its specific labour techniques. This recognition also brought with it an awareness among unions that their responsibilities were immeasurably increased. Industrial change has many effects on the worker's economic claims, his personal, social and economic status, his earnings and his physical and personal wellbeing. The union has now to be particularly equipped to protect the workers and to secure for them the broadest benefits to be derived from such change. Also, the union has acquired the more particular technical obligation of preventing abusive and inequitable applications of the scientific management approach and techniques. For these tasks its representatives have to acquire special and particular competence.

Recognition of the Need for Technical Services

In those unions where outright opposition to these approaches and techniques had been replaced by an emphasis on the specific consideration of changes, standards, earnings and job opportunities, interest grew in getting technical advisory services. The demands for such services multiplied as the difficulties mounted at the local level in grappling with employers' proposals. Local experience and insight were not always equal to the task.

Existing union representatives usually felt competent to deal with problems relating to job changes, the introduction of new machinery, new duties, layouts and job rates. It was a matter of routine to handle these problems where the changes were variants of existing procedures; where new piece rates were derived from an existing incentive system

[1] Solomon BARKIN, statement before the Massachusetts Special Commission on the Textile Industry, 31 October 1949.

not based on time study ; where changes in layout and methods did not radically alter job relations ; and where the work pace remained basically the same. In such cases union representatives could quickly recognise the full effects of the proposal. They could deal with them, provided that employers did not introduce a foreign technical jargon which seemed to confuse the issues, and did not demand the conclusion of binding agreements on uniform systems of determining work assignment, rates or job values.

But a new situation was created by the introduction of the specialised labour techniques of scientific management, such as time study, formal wage incentive systems, job evaluation and merit rating. These brought in a language foreign to the worker and his experience. The new phraseology bore some resemblance to current mill language. But older terms, like " normal worker ", " average worker ", " piece rate pace ", " fair day's work ", " base rate ", " expected earnings " and others, acquired new specific meanings when expressed in mathematical terms.

These formalised techniques created a further complication in that employers claimed that they had to be rigidly, uniformly and consistently applied throughout the plant. In negotiations on these problems, employers remained unyielding, literal and bound by the system. They ruled out adjustments dictated by expediency or " practical needs ". The system had to remain inviolable, even though it was not markedly appropriate.

Another difficulty appeared with the employers' use of technicians. Many of these men were already in bad repute with the labour movement. Moreover, they introduced a tone of arbitrariness which was foreign to the true spirit of bargaining. They were generally untutored in collective bargaining procedure and were trained to insist upon their right to deference to their professional judgments. They did little to inform employers of the limitations of the techniques and supported them in denying the unions access to the data used for developing proposals. Even when information was given, they did little to overcome the spirit of niggardliness governing the submission of data. They made little effort to dissociate fact from assumption and theory. Moreover, they tended to reinforce the efforts of management to treat all submissions as

established facts. No concessions were made as to probable errors or limitations of data. They did not help to define the scope for collective bargaining, but kept on insisting that the findings and techniques were to be treated as items of revealed truth, not to be tampered with by any man, and especially not by a union committee.

In the face of such treatment some local unions have reverted to an attitude of outright resistance to management programmes. In other cases, however, the unions have continued to acquiesce, at times because of their limited bargaining power, hoping to soften the employer's attitude through the plodding processes of collective bargaining. Grievances or complaints are used as a means of keeping objections alive. The negotiation of contracts provides periodic opportunity to attempt to recast the system. The union seeks to correct some abuses, resolve some complaints and secure some benefits through applying the principles of equity rather than by dealing with the details and intricacies of the system itself.

Local unions attempting to work out their problems along these lines have felt a particular need for assistance. They have had to define their long-term goals and to plan how to convert existing techniques to ones more acceptable and manageable for them. For these tasks they need specialised assistance. Moreover, they would benefit by competent aid in mastering the techniques and learning how to handle daily grievances and complaints.

As the recognition of the need for this assistance has grown, technical services have been established in various unions. The essentially local nature of the bargaining process has tended to put the emphasis on local assistance rather than on national services.

The Technical Service of the Textile Workers Union

In response to these general developments, and to those peculiar to the textile industry, the writer organised a technical service in the Research Department of the Textile Workers Union of America.[1] A specialised staff was, after some years,

[1] Cf. Solomon Barkin : " Labor Union Research Departments ", in *Personnel Journal* (New York), Vol. 19, February 1941, pp. 290-299.

recruited to aid him in extending the service, and it now consists of a senior and junior engineer in the national office and two field engineers.

Before describing the goals and the functions of this group, two conclusions reached early with regard to the organisation of the service should be noted. First, the staff must consist of permanent personnel and not of consultants.[1] There are practically no engineering consultants who could maintain an undivided loyalty to the trade union. They have been trained in management's approaches and techniques and depend upon management for their work. Few are prepared to serve trade unions without considerable re-education. They have no initial preparation for helping workers to protect themselves against management's authority. They are neither steeped in nor have had access to a comprehensive statement of labour's attitude towards these problems. To gain the necessary insight and understanding, and to learn how to adapt their professional engineering skills and knowledge to serve the labour movement, they must be given careful direction and enjoy an intimate and permanent relation with the trade unions.

It is also vital to make their positions permanent if they are to acquire the other skills necessary for successful service. One is the ability to formulate complaints carefully and accurately and to give adequately documented expression to the workers' general dissatisfaction. Another is a facility for handling specific technical grievances in a manner which takes account of the personal, union and bargaining relationships at the particular workplace. Intimate association with the union will permit such a person to learn how to formulate proposals with due regard to the opportunities afforded by the contract, to the existing balance of bargaining power on a particular job, or in a particular department or plant, and to general union policies and standards.

A further advantage of a permanent staff is that its members can win the confidence of the union's officers, which they need in order to act expeditiously. They must learn to present their material in a manner easily understood by workers.

[1] Cf. Solomon BARKIN "Applied Social Science in the American Trade Union Movement", in *Journal of Philosophy of Science*, Vol. 16, No. 3, July 1949, pp. 193-197.

Finally, a person on the permanent staff is always available for repeated consultation and advice.

The second conclusion is that a union's technical service must be properly integrated with its economic staff. Management techniques are designed to meet economic issues. They are focused on the negotiation of earnings and wage rates, work duties, man-hour requirements and levels of effort. They determine the worker's share of the benefits of higher productivity and his job claims. Engineering and management data and findings are materials used in the discussion of these problems, and have no independent significance in collective bargaining. Management's very effort to establish them as absolute measures is a basic bargaining issue. In the present industrial framework, an isolated determination will ordinarily be prejudicial to the worker's case. The technical service must serve the union's negotiators in the same manner in which the management uses its technicians.

General Goals of the Service

The primary function of the technical service of the Textile Workers Union is to aid and train the Union's administrative personnel in the handling of problems of an industrial engineering character. The ultimate aim is to provide such training by demonstration and instruction as will make these officials self-reliant. They will then be able to understand fully the employers' proposals and their implications and will be acquainted with the methods by which they have been derived. After identifying the appropriate Union policy, which is seldom available in precise written form, they must be able to apply it in such a manner that it takes into account the local bargaining relationships and the long-term union and worker interests. In negotiations they must keep in mind that the workers are primarily concerned with the results as they affect their level of effort, job assignments, fringe benefits, remuneration and other conditions and the provision made for those laid off. These representatives must be able to dissect fact from judgment and allegation, and to take exception to unacceptable procedures, inadequate and unreliable data and any effort to withhold information or to stop discussion of the issues. They must also learn the need to avoid being rigidly

bound by such techniques as time study, job evaluation or merit rating.

The above goal is constantly held to the fore. It means that the technical staff must remain small and place its emphasis on training. It also reflects the fact that, no matter how rational the argument and how complete and overwhelming the data, the final result in the vast number of cases will depend upon the balance of bargaining power. The Union's administrative personnel represent and direct its bargaining force and must therefore be the spokesmen in such negotiations.

The technical group, through its operations, has had a salutary effect on collective bargaining on technical issues in the United States textile industry. It has encouraged managements to make more careful investigations of technical issues, to re-examine their procedures and techniques, to submit more adequate data to the unions, to accept more orderly procedures for communication with the unions and to review in detail all matters of interest. The discussions have tended to define the problems and to narrow the range of general and specific differences. A clearer differentiation has been established as between facts and judgments contained in original employer proposals. The continuing process of accommodation in this field has helped to stabilise collective bargaining, promote orderly progress and eliminate many headlong conflicts such as were previously prevalent in the industry.

We shall now consider each of the specific functions discharged by this service.

Advisory Functions

The most general function is that of helping the Union to develop its policy on the issues raised by changing levels of worker effort, technological job and work assignment changes, time study, wage incentive plans, job evaluation, merit rating and the technical conditions in the mill. The basic lines of policy have evolved over the course of the Union's history. But adaptations, refinements and elaborations are constantly necessary to meet new conditions, the changing balance of bargaining power and new concepts of labour relations. To indicate some of the broad lines of thinking on this subject,

the following paragraphs outline the Union's policy where available, or the writer's approach and conclusions.

Work Assignment Changes.

Union policy has been explicitly developed in connection with the procedures for making changes in work assignment. The Union has accepted the principle that changes of a technological and routine character should not be stopped. Nor should a management be prevented from making equitable adjustments in work assignment during the course of the contract. It is not practical for managements in many divisions of the textile industry to maintain agreed work standards until the close of a contract year and renegotiate them at that time. But these conclusions concerning employers' rights have had to be harmonised with workers' legitimate claims. The general formula developed by the Union in its collective bargaining contracts seeks to reconcile the two. It grants management the right to make routine and technological changes, but prevents other changes except with the Union's consent or through an arbitrator's decision.[1]

In approaching specific changes in work assignment, in levels of worker effort or in the arrangement of duties, the principle should be that of considering each case on its own merits. The tendency is to approve those changes which establish competitive parity for the individual employer, but to be wary of those which push the levels of effort or the assignments beyond prevailing standards. To implement this policy, the Union's task has been to amass sufficient bargaining strength to effect an orderly approach. The technical staff has to provide technical guides for defining prevailing standards, a difficult task in the textile industry, where machine tending jobs prevail. Employers have been of little assistance in this work.

Time Study.

It is in connection with proposals for changes in job assignment that the Union most frequently encounters the use of the time study technique. It is, of course, fundamental to the

[1] Cf. Solomon BARKIN: "Handling Work Assignment Changes", in *Harvard Business Review*, Vol. 25, Summer 1947, pp. 473-482.

establishment and operation of a time study type of wage incentive plan. The Union's basic attitude has been that this technique has no sound scientific justification in constructing new job assignments. The recording of a worker's performance on a job by a time study man, if done adequately, does provide useful data for understanding existing job assignments and current levels of worker effort, even though such data suffer from many limitations. But present procedures for the construction by extrapolation of a new assignment, incentive rate or task from a number of such studies cannot be conclusive, and at best must be treated as suggestive. Such calculations are built on judgments, personal attitudes, technical conclusions and theories which have no scientific basis. They are all coloured by the economic self-interest of the employer who hires the time study man and whose outlook the time study man has absorbed in the course of his training.

Moreover, textile mill operations do not lend themselves easily to the use of time study techniques for constructing new job assignments. The calculations used in such extrapolations necessarily rest on the assumption of rigid methods for the performance of work duties, on a precise, undeviating pattern in the occurrence of work duties, on a close articulation of work duties, and on unchanging work, machinery, room and material conditions. These prerequisites do not exist in a textile mill.

Besides being of questionable application to the textile industry, the technique rests on an unvalidated hypothesis. It assumes that universal normal time values, applicable to all persons, or certainly to all persons in countries with modern technology, can be established for specific work elements when performed by routined workers according to fixed motion patterns. Despite this claim, there is no agreement among time study men on the factors in worker's performance to be normalised or how they are to be measured. Nor is there a clear definition of the norm. Moreover, the decision as to the level of normal application is an economic, physiological, psychological and political one, for which the engineer has only limited qualifications and which is properly lodged in the hands of the principal negotiators in organised plants. At present, the technique relies at best for the determination of the norm on the instructed and practised judgment of the

time study man trained by employers, or by employer-minded institutions.[1]

The procedures used in current time study practice for acting on what are basically questionable assumptions are neither reliable nor valid.[2] Efforts to refine the technique—through standardised film strips on the rating of which time study men and managements agree or through predetermined time values for motions—lend superficial objectivity to an uncertain base and merely cover up basic deficiencies.[3] The very procedures for constructing job assignments or values for work from such data are similarly unauthenticated and are built on expedients which have been caustically attacked by time study practitioners as well as by trade unionists.[4] The techniques have been applied through employer fiat, and have been made acceptable as operating procedures primarily through wholesale adjustments, exceptions and accommodations at points of protest. Unfortunately little objective research and testing has been done on the technique itself, and its effects on workers have not been measured or analysed.

Arriving at these basic conclusions, the Union has avoided being bound by time study findings. However, it has recognised in many contracts that an employer may employ such means to arrive at his judgment about a job. In this connection, the Union's technical group has urged employers to assure themselves of the adequacy, representativeness and completeness of their studies and operational data so that its own proposals would be built on full and carefully assembled information. If that is done, both parties will have useful data. The Union will gain necessary facts about the job to supplement its own information, which reflects the experience and judgment of the workers. Where the data are inadequate, the Union has arranged for its own representatives

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[1] Cf. Solomon BARKIN : " Labor Views the Working Day ", in *Advanced Management* (New York), Vol. VII, No. 1, January-March 1942.

[2] Cf. Thomas Arthur RYAN : *Work and Effort : The Psychology of Production* (New York, Ronald Press Co., 1947), pp. 213-229.

[3] *Ibid.*, pp. 229-236.

[4] Cf. Solomon BARKIN : " Organized Labor's Stake in Industrial Engineering ", in *Modern Management*, Vol. VI, July 1946, pp. 50-54 and 57-59 ; Abraham COHEN: *Time Study and Common Sense* (London, Macdonald & Evans, 1947), p. 112; William GOMBERG: *A Trade Union Analysis of Time Study Changes* (Chicago, Science Research Associates, 1948); and Ralph PRESGRAVE : *Dynamics of Time Study* (New York, McGraw-Hill Book Company, 1945).

to make floor studies in the mill and collect operational data, both to supplement and test the employer's information and to elicit the observations of workers concerning job conditions.

Wage Incentive Systems.

A third field for the definition of policy relates to the method of paying wages. The Union has not as a rule tried to substitute day work for piece work on key production jobs where piece work has prevailed for many decades. Its main responsibility has been to protect workers against the abuses of the system and against managerial failings. Protective devices and controls have been developed and provisions for their application written into contracts.

But there has been little sympathy for the time study type of high-task wage incentive systems, such as the Bedaux, unit, standard hour and similar plans.[1] These rely on the meticulous application of high-task standards derived from the use of time study. They require workers to increase their effort beyond high-task levels to secure premium wage payments. They are designed to deprive the worker of all benefits of rising productivity from sources other than his own effort—and, at times, even of that. The systems demand a high degree of managerial competence and responsibility for conditions, including large technical staffs and technically trained supervision. These are not common in textile mills. Finally, the systems place a strain upon the Union's administration far beyond that of any other device, and create an endless series of conflicts.[2] The Union has found that simpler incentive systems can be adequate for achieving employers' desires for efficiency and cost control.

Job Evaluation.

Formal systems of job evaluation (point and factor comparison) have never gained any importance in the textile industry. The Union's definite policy is to avoid them as fixed

[1] Cf. Van Dusen KENNEDY: *Union Policy and Incentive Wage Methods* (New York, Columbia University Press, 1945).

[2] Cf. Solomon BARKIN: "Labor's Attitude toward Incentive Plans", in *Industrial and Labor Relations Review* (Ithaca, N.Y.), Vol. 1, No. 3, July 1948, pp. 553-572.

procedures for setting job rates. Psychological judgments of values exercised within a prescribed form usually produce a predetermined pattern of job ranking. The resulting alignment of jobs does not necessarily reflect a proper appraisal of the economic values of the jobs. The technique is rigid and restrictive. It has all too often had the effect of producing job rate reductions, or at least of preventing workers from sharing in the benefits of rising productivity. The Union has preferred free collective bargaining on job rates. It has carefully analysed the characteristics and demands of each job and the various value judgments concerning it. Its conclusions have then been governed by a special pattern of values affecting a particular job and not by a predetermined rigid formula. It has urged the adoption of job rates and descriptions for each plant.[1]

Merit Rating.

Merit rating has been rejected as unreliable, being merely an organised system for making judgments which cannot serve to differentiate the great mass of workers. The Union has emphasised the principle of seniority in promotions, lay-offs and recalls.

Service Functions

The second major function of the Union's technical service is to aid in the application of the above policies with a view to solving specific problems at each level of operation. This is its primary responsibility. As noted, the technician in the discharge of this function acts through the administrative official. The latter is the spokesman. The effective use of a technician's service therefore depends upon the existence of adequate administrative personnel and machinery. He cannot help effectively if the grievance stewards and union committees do not function well. In some cases it has been necessary to place technicians in a local union's office for periods of time to supplement local efforts.

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[1] *Idem :* " Wage Determination : Trick or Technique ", in *Labor and Nation* (New York), Vol. 10, No. 6, June-July 1946, pp. 24-26 and 48 ; Vol. 11, November-December 1946, pp. 53-54.

The four service functions performed by the staff are to aid in union organising, in contract negotiations, in the handling of specific job grievances under an existing contract, and in arbitration proceedings.

Union Organising Drives.

In drives to organise workers in new mills, the technical staff's responsibility is to sharpen up job complaints or furnish information which might interest workers concerning their job problems. Specific complaints must be tied together into generalised grievances relating to the mass of workers. The Union's remedies must be clearly defined. Where " advanced " engineering techniques are used, the organiser is aided by technical surveys of the practices, rules and conditions in the plant, obtained in part through interviewing individual workers. The resulting data are woven together into a description of deficiencies in mill practice. Some organisers have to be instructed in the processes and jobs at a special type of plant and the customary difficulties which arise from them.

Contract Negotiations.

In contract negotiations, the group helps to apply the general policies. The more the management uses " advanced " techniques, and tries to bind the Union to them, the more frequently the technicians are called into conference. They are less likely to be needed in negotiations dealing with the less rigid and less complex problems. When they participate, they help in analysing and defining the bargaining issues; they submit information on the defects of management's data, arguments and proposals; they help in evaluating management's competence and preparation for the use of time study and allied techniques, and in working out adaptations of Union policy; and they offer detailed explanations of the Union's position.

Where formal high-task wage incentive systems based on time study, formal job evaluation plans and merit rating schemes are subjects for negotiations, the technical staff is usually responsible for helping the Union representatives to persuade employers to abandon them in favour of procedures more commonly employed and more acceptable to the Union.

Very frequently they are called in where the Union is seeking to have a company overhaul an existing procedure or system built upon these formalised techniques. Where these goals are not realised, it is necessary to negotiate controls and regulations in the contract to enable the Union to correct abuses, protect the workers and ensure equitable results.

Where formal high-task wage incentive systems based on time study have had to be accepted, the function of the service has been to negotiate very precise rules for their operation. The following have been among its aims: inclusion of all workers under the plan; assurance to the worker of the full value of his increased effort; assurance to the worker of full protection against managerial neglect or incompetence in maintaining standard conditions, and assurance of full opportunity to earn incentive wages; adequate instruction of workers in the system and its administration; reporting of production and earnings to the workers and the Union; adjustment of job specifications to actual operating procedures and working conditions; and prevention of unwarranted changes in rates, standards and assignments. Agreements have to be negotiated in the light of these purposes.

In the negotiation of contracts which specifically permit the employer to make time studies, the aim is to assure the Union full access to the information collected by the company, to retain the Union's right to make independent floor studies, and to ensure full access to plant operational data. In some cases the agreements specify the minimum types of studies which may be made in order to ensure adequate investigation. Little effort is made to control or direct the mathematical procedures for extrapolating standards from such studies. There is no way of preventing the time study man from circumventing an agreement on one item by compensating adjustments in other calculations. To meet this difficulty and to ensure adequate personal time and rest in all plants, agreements have been negotiated on minimum periods of non-working or rest time away from the job. Contracts frequently provide specific rest schedules showing when workers may leave the job. In addition, they may include arrangements for relief workers and for wash and clean-up periods, and definitions of such operating conditions as humidity, temperature, noise, lighting, physical condition of machines, frequency

of machine stoppages and methods of checking departures from standard.

Where job evaluation plans and merit rating plans exist, the aim is to weaken their influence over job rate adjustments and their control of promotions, layoffs and recalls.

Handling Specific Job Grievances.

The greatest volume of work for the technical service is connected with the consideration of specific grievances arising during the course of the contract. Here its work is to define the issue; analyse the contract; advise the administrative personnel of the local union on the remedy; collect the necessary data; and if necessary argue the issue. In some instances, the technician must aid in the negotiations, in formulating an agreement and in explaining it to the membership.

The ultimate objective is to help to develop orderly procedures for the communication of proposals and information by the company to the local union. Where these do not already exist, the technical staff's function is to use specific cases to help convince the management of the value of regular methods of keeping the union informed and furnishing it with enough information to evaluate the proposals. In the handling of work assignment changes, the technical staff has urged companies to develop a standard form which would inform the local unions of the reason for the change; of current and proposed duties and assignments; current and proposed levels of worker effort; current and proposed man-hour output; current and future earnings of workers; detailed job specifications for current and new jobs; and the proposed disposition of displaced workers. With this information the union's administrative official can make an intelligent start towards appraising the proposal and examining with care the remaining detailed facts.

Where proposals are built on time studies, the union should be supplied with considerable information. Copies of the original studies should be sent to the union or easy access assured. A convenient summary of the studies should be sent, specifying the persons observed, the length of the studies, the machine, materials and conditions studies made and other identifying information to indicate the representativeness of the studies. The union should also be furnished with all instruc-

tions given to or developed by the time study man respecting such matters as work elements to be recorded ; their beginning and end points ; the handling of divergences from standard method patterns ; the handling of walking time ; definitions of non-working and non-allowed times ; the meaning of patrol inspection ; the rating methods and standards ; and other similar issues. A clear and full statement must be furnished on the procedures used and assumptions made in arriving at standard times and in constructing the standards. The union should be furnished with work duties charts and job specifications on the current and the proposed job. Checks on all operating items, including machine speeds, package weights, waste, etc., should be supplied. The technical staff has urged that the more exacting the measurement used by management and the tighter the work standard, the more information the union requires.

Through the receipt of the above data the union is in a position to understand and evaluate the company's proposal and move more expeditiously to the formulation of its own views.

Arbitration.

The final service function is the aid given to local representatives in handling the union's case in arbitration proceedings. This may require extensive interviewing of workers, additional floor studies in the mill and investigations of available experience and literature. A staff man may prepare the briefs and exhibits, and in more complicated contests, he is likely to present the case.

Other Functions

Training, Education and Information.

The constant objective of the Union's technical service is to develop technical competence in as many as possible of the Union's administrators. Local leaders must acquire full knowledge of the objective of their negotiations, and master the industrial engineering techniques sufficiently to work effectively towards its attainment. They must be able to distinguish fact from opinion and to define their own demands carefully and precisely.

A number of different educational experiments have been made to advance these ends. A major one consists of training institutes for union business agents and union members of textile industry joint boards. A regular course of study is being evolved to prepare them for their critical role. It includes lessons designed to provide an understanding of the purposes of negotiations, the technical details of job specifications, management's responsibilities under different types of labour standards, the procedures followed by time study men and their defects, the economic issues in technical negotiations, wage incentive techniques and the problems encountered in trying to get for workers a share of the gains from rising industrial productivity. At individual sessions the reading and discussion of the text and the analysis of prepared questions are combined with practical assignments in a workshop period. Towards the end of this course, discussions deal with specific problems currently being met by the group.

More general discussions are carried on with local union leaders. These are designed as general orientation in handling specific types of forms for collecting information for their own use and techniques for checking on their own jobs.

The work of the institutes is only a part of the educational effort. A textbook is being written to serve as a basis for training staff men. Forms have been developed to guide the staff and the members and to facilitate their collection of data. Among these are work duties charts, work assignment forms, manpower tables and job description forms. Case studies written by the technical staff, summarising its experience with specific problems, have been distributed to the local unions for guidance and information. Surveys have been prepared and distributed on the problems of specific jobs and types of mills. Bulletins have been issued on the technical processes in each type of mill, with information on the equipment currently in use on each process. A column, " On the Job ", appears in the Union's semi-monthly newspaper, which describes new machinery and processes and their effect on workers.

Interpretation of Developing Technology.

Every industry affected by modern science is undergoing radical changes in the post-war period. The rate of

technical innovation in the textile industry has been markedly accelerated. The technical service studies these developments and prepares reports on the trends and their probable impact on the industry and its workers.

The trade union leader must be prepared for these advances in technology. Foreknowledge of the probable rise or decline in specific jobs, or in sections of the industry, makes possible more realistic policies. More adequate programmes to meet coming problems can be defined. Issues which cannot be dealt with by collective bargaining must be immediately brought to the attention of the general public.[1]

Changes in the art of management itself must also be discerned, for they have a daily effect on the demands made on the Union and on workers. If management is centralising its controls, establishing narrower tolerances, raising quality standards, standardising and simplifying procedures, prescribing quicker turnover of inventory and resources, employing more controls at each stage of production, the Union's problems are different from those prevailing in a less exacting era. The administrative staff has to be more alert and more carefully trained. It must be prepared to make requisite demands on employers.

The changes in the nature of the jobs are being closely observed for their effect on the type of worker needed in the industry, the demands made on the workers and the rates of pay. Some trends can be encouraged by the Union. Among the latter we would include the recent development of a winding machine which delivers the job to the worker so that he can remain seated throughout the day. This is a revolutionary innovation in textile machinery design and stands out in sharp contrast with practically all other textile machines, on which the working parts are stationary and the worker tends them by constantly patrolling about the machine. Another welcome change has been the introduction of material handling equipment, which has eliminated much backbreaking manual work. This last presents serious problems of displacement, since 30 per cent. or more of the labour force in the traditional mill was in this class.

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[1] See, for example, *Textile Labor* (New York), Vol. X, November 1949: "Bosses to Blame for Textile Moves", pp. 1 and 3.

Labour-Management Co-operation.

A number of lagging managements have been helped in their adjustments to new trends. The technical staff has been able to offer them advice on machine layout, new equipment, allocation of worker duties, systems of work schedule, methods of control and safety measures, as well as on commercial problems. During the war, such demands multiplied as a number of local unions established labour-management committees. In the textile industry, however, employers were generally not prepared for extensive co-operation. In the post-war period, mill quality committees have been aided in setting more specific standards. Many such efforts at co-operation have collapsed because managements converted the improvements suggested by such committees into arguments for higher machine assignments or production quotas. The vast preponderance of mills rely on their own engineers, consultants and supervisors.

Marginal employers who have sought wage or other concessions have often been met with impressive lists of suggested improvements in operating conditions, supervision and controls.

Development of Standards on Mill Conditions.

The Union's inherent interest in working conditions has encouraged the technical service to advance current standards of mill safety and health. The writer has participated as a member of the National Code Committee for Safety Standards in the textile industry. The staff has encouraged the modernisation of safety codes in certain States. Its most outstanding contribution in this connection was the development of a code for textile mill air-conditioning. The manual it published explains the need of refrigerated air-conditioning and its value both to workers and to management; the methods of measuring the degree of comfort; the types of plant controls; and State legislation required for this purpose.[1] Members

[1] TEXTILE WORKERS UNION OF AMERICA, Research Department: *Air Conditioning in Textile Mills: The Case for Temperature and Humidity Control to Provide Comfort, Health and Safety and Optimum Production* (New York, 1948).

of the staff have appeared before State legislative committees in support of this legislation.

The staff has also encouraged more detailed study by Government and industry of such hazards as carbon bisulphide in the rayon industry, glass fibres, and dyes in the dyeing and finishing industry.

Education of the Public and Employers.

Organised labour's greatest handicap in dealing with the problems discussed in this article is that its position has not been fully explained to the public and therefore not fully understood. The deficiencies of the labour techniques, of scientific management and the abuses arising in their administration have not been widely publicised. Organised labour is generally too absorbed with the process of collective bargaining to assign much time or weight to the task of developing material respecting its views for public use. The engineering and business schools which specialise in teaching time study and allied techniques have been remiss both in neglecting to learn labour's views and in failing to test the techniques they teach. Too many academic persons have a professional interest in perpetuating the use of these tools. The professional associations of engineers and personnel men have not been disposed to encourage fundamental criticism. The result has been that much of the limited critical work available has been done by persons recruited from schools other than engineering and business.

The technical staff of the Union recognises the importance of this task, but it is too small and limited in resources to undertake more than a modest part of it. Its members on occasion speak to management, engineering and university groups and present their views and experience and the available research evidence. On occasion, articles are written to present formal statements, but these are perforce limited. The Union staff considers its fundamental function in this connection to be that of encouraging more critical study and appraisal of the materials in this field by others.

Conclusion

The responsibilities and functions of the technical engineering staffs of United States trade unions have been developed in the light of the unions' needs. American management has been pressed by the high wage level, recurrent labour shortages, vigorous technical developments and the opportunities for high profits to demand greater industrial efficiency, high levels of worker effort, and a large share of the benefits of increases in industrial productivity. Trade unions have in part outgrown the attitude of protest against these policies and practices. Their views and actions have therefore been primarily designed to establish controls which will give workers protection from, and a share in the benefits of, these advances, thereby moderating the human cost of industrial production.

These union activities have not changed the basic trends in United States industry. Management has continued to be diligent in the discharge of its functions. Industrial productivity has continued to rise at no lower rates than before. But management has become more considerate in its methods, thus minimising the human costs, and more willing to consult with unions to arrive at mutually acceptable agreements which allow for change and promote efficiency and yet assure to workers more benefits and lower personal costs. The very process of deliberating on changes has contributed to greater co-operation and more planning. It is probable that the rate of increase of productivity will be advanced as this process becomes more widely accepted.

REPORTS AND ENQUIRIES

Conditions of Work of Fire Fighting Services: Hours of Duty, Rest Periods and Paid Holidays

In response to numerous requests for information on the conditions of employment of fire fighting services, and specifically on firemen's hours of duty, rest periods and holidays with pay, the International Labour Office has undertaken an enquiry into this subject. It is believed that the material collected on the conditions of this particular group of public employees, besides satisfying the various individual requests, may be of sufficient general interest to warrant publication of the following preliminary survey, based on conditions in seventeen countries.

Introduction

The importance of fire fighting services can be inferred from statistics showing the frequency of fires and the loss of human lives and of property they entail. In the United States, for example, it was stated at the President' s Conference on Fire Prevention held at Washington in 1947 that the average number of fires was 830,000 a year, and that during the year 1946 alone more than 10,000 lives were lost and property to the value of over $560 million was destroyed by fire. [1] While fire prevention is a responsibility shared by the public, the role played by the fire fighting service in combating this menace to life and property is therefore vital.

A study of the conditions of employment of fire fighting personnel appears relevant also in view of the substantial number of persons involved. For example, the United States Census of 1940 showed that 77,782 firemen were then employed in fire departments. On 1 January 1949, the fire department of New York City employed 10,501 men. [2] Recent figures [3] for various large cities show 2,438

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[1] Cf. *International Fire Fighter* (Washington, D.C.), June 1947, pp. 2-4.

[2] International Association of Fire Fighters: *Working Conditions in Fire Departments of the United States and Canada, January 1949* (Washington, D.C., 1949).

[3] Taken from *Fire Protection and Accident Prevention Year Book, 1950* (London, Benn Brothers Limited, 1950).

professional personnel in the fire brigade of the County of London, 3,920 full-time personnel in the firemen's regiment (a military unit) in the Paris and Seine department area, 890 full-time personnel in Toronto, 495 in Naples, 487 in Oslo, 440 in Stockholm, etc. Some indication of the number of firemen in smaller cities is given by the total of 1,107 for 10 cities and towns in France with a population ranging from 90,000 in Tourcoing to 600,000 in Lyons [1], and the range from 122 to 480 firemen, according to city, for 54 cities of 100,000 to 250,000 population in the United States and Canada. [2] The number of fire fighting personnel for each locality depends on the density of population, area of activity, degree of risk and other factors, but it is evident that firemen form a far from negligible occupational group.

The following study deals with firemen's hours of work and related aspects of their employment, including the working schedule and hours of duty, rest periods, shifts and platoons, weekly or monthly rest schedules, holidays and leave. It refers mainly to paid full-time firemen in the public service who work day and night on a permanent basis, and does not include part-time firemen or volunteers or other groups such as are often to be found in small localities but for whom no systematic information is available. Some observations will be made with regard to private fire services in factories, department stores, etc., but the diversity of systems and conditions makes it impossible to do more than mention a few cases by way of illustration. In this connection, it should be noted that the status of firemen in the public service differs from that of the members of private fire services in factories, department stores, etc. The former are essentially public employees and are frequently subject to statutory or administrative regulations, with due exceptions allowed in view of the nature of their work. The status of the latter is that of workers or salaried employees of the undertaking and is therefore subject to the general labour legislation applicable to industry and commerce, with such exceptions or other special provisions as are needed to meet the requirements of their fire fighting duties.

The basic factor in the organisation of the hours of work of a fire department is of course the necessity of having sufficient fire fighting personnel available at all times for whatever action may be needed in fulfilment of its duty to protect the public from the ravages of fire and such other disasters as the department may be called upon to combat. This factor is subject to the conditions and needs of the local community and to such practical limitations as the financial resources available for the employment of fire fighting personnel. While adequate financial support for the fire fighting service is an

[1] *Report of the International Conference of Firemen, London, September 16th-19th, 1947* (organised by the International Federation of Unions of Employees in Public and Civil Services in conjunction with the British Fire Brigades Union), p. 33.

[2] INTERNATIONAL ASSOCIATION OF FIRE FIGHTERS, *op. cit.*

important matter, it will be sufficient here to note that it is a major limiting factor with regard to the aggregate number of fire fighting personnel in a fire department and to the equipment and facilities available to them.

Given the particular size of a fire department and the particular conditions of the locality it serves, the hours of work will be determined essentially by the need for ensuring the best possible service to the public, while paying due heed to the health and welfare of the personnel of the department. The wellbeing of the firemen is generally recognised as an important factor in the efficiency of the service. Some of the earlier systems of organisation of hours of work, such as the continuous-duty system prevailing during the latter part of the nineteenth century in the paid fire departments in some United States cities, appeared to have placed insufficient emphasis on this factor. Under the continuous-duty system, the fire fighting personnel were required to be continuously present at the fire station, leaving only three times a day for meals. This continuous attendance was broken only by one free day in every two weeks or every month. The effect of this system on the social and family life and the mental and physical wellbeing of the firemen was obviously not very satisfactory.

In course of time such systems were gradually replaced in some advanced countries by more reasonable and efficient methods, such as the two-platoon and other systems. A gradual reduction of hours took place and is continuing in various countries today. While the rate of reduction appears to lag behind the average rate in industry and commerce, the general trend has been such as to enable the International Conference of Firemen in 1947 to adopt the following resolution, proposed by the General Secretary of the British Fire Brigades Union:

> ... Conference rejects the conception of a fireman's duty as requiring him to perform longer hours of work than those generally applied in professional and industrial occupations. National circumstances may require the method and exact system of applying this principle to be left to the national organisations themselves. [1]

In order to bring out the complexity of the problem, the situation in various countries for which data have been collected is briefly described below. The information relates to the following countries: Australia, Austria, Belgium, Canada, Czechoslovakia, Denmark, Finland, France, Italy, the Netherlands, New Zealand, Norway, Poland, Sweden, Switzerland, the United Kingdom and the United States. It is based primarily on material obtained by the I.L.O., its branch offices and correspondents directly from Government departments (*e.g.*, in Canada, Finland, Italy and Norway), municipal authorities (*e.g.*, in Belgium, Denmark and Sweden), municipal fire departments (*e.g.*, in Belgium, Canada, France, Italy and Switzerland), trade unions (*e.g.*, in Austria, France,

[1] *Report of the International Conference of Firemen, op. cit.*, p. 60.

the Netherlands and Switzerland, through the International Federation of Employees in Public and Civil Services) and employers' organisations (*e.g.*, in Belgium). While most of this information was gathered in the second half of 1949, no claim is made that all of it is up to date. It has been supplemented by particulars drawn from the sources already cited [1] and from legislation, collective agreements, arbitration awards, etc., but it remains rather uneven, with substantial data on certain countries and very little on others. Nevertheless, it may serve to indicate the general trends in the conditions of work of firemen and to arouse interest in the problems of this important occupational group.

National Regulations

Australia

The detailed organisation of hours of work of firemen in Australia varies somewhat in the different States and localities. The following information, given by way of illustration, relates to two cities in Queensland and to Victoria.

In Cairns and Innisfail in *Queensland*, the fireman's ordinary hours of duty, including " standing by " time, may not exceed 70 per week, and his actual working time may not exceed 40 hours a week or 8 hours a day. The agreement of 15 June 1949 between the Innisfail fire brigade board and the trade union concerned specifies that no fireman may be required " to do more than 8 hours' station work on any tour of duty, or more than 40 hours in 6 consecutive days, provided that the time spent in attending calls shall not be included in the 8 hours and shall be included in the 40 hours' weekly total, and provided further that all time worked in excess of 40 hours in 6 consecutive days shall be paid as overtime at the rate of time and one half for ordinary employees and double time for shift workers ". In Cairns, 4 weeks' paid annual leave is granted for each 12 months' service, or a monetary *pro rata* equivalent for a lesser period ; the arrangement is similar in Innisfail, except that the annual leave is 4 weeks 20 hours.

The Industrial Appeals Court in *Victoria* issued a decision on 5 December 1949 governing various conditions of work of firemen, including their hours. According to this decision, a 40-hour week is to be worked with consecutive shifts of men throughout each of 7 consecutive days, in shifts of 8 hours each; employees must receive 48 hours' notice of a rostered shift. The ordinary hours of shift workers are not to exceed 8 in any day, and maximum limits are also fixed for the hours in each 7, 14 or 28 days.

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[1] See pp. 637 and 638, footnotes.

Space does not permit an examination of conditions in other States, such as the provisions of the award for fire brigade employees (State) made by the Industrial Commission of New South Wales. In general there appears to be a trend towards gradual improvement in the conditions of work of firemen throughout Australia.

Austria

According to information collected by the Union of Municipal Employees in 1947 regarding hours of work of firemen in some of the major Austrian cities, such as Vienna, Salzburg, Innsbruck, Linz, etc., the average weekly working time was 84 hours. A fireman had 24 hours on duty, starting at 7 a.m., and each spell of duty was followed by 24 hours off duty.

The system of annual holidays was as follows : 14 working days' leave for a period of service up to 5 years ; 21 working days for 5 to 15 years' service ; and 28 working days for over 15 years' service.

Belgium

The following survey of the hours of work of full-time firemen in some of the principal cities in Belgium will indicate the general situation in that country.

The *Antwerp* fire brigade is divided into two companies. Each company is on duty 24 hours, starting at 7.45 a.m. and followed by a rest period of 24 hours. During the day off the firemen are not allowed to leave the city, and the officers must be available for inspection work and to deal with emergencies. There is no remuneration for overtime, but overtime hours can be deducted from the normal working hours. Except in cases of emergency, no special tasks are performed and no repair work is done on Sundays.

The annual paid holiday is 7 days for firemen with less than 5 years' service, 8 days for those with more than 5 years' service and from 9 to 15 days for officers according to rank. An extra holiday with pay is granted every two months except in August, during which period fire guards are stationed in the theatres.

The *Brussels* fire brigade is also divided into two companies, each of which is on duty for 24 hours followed by 24 hours of rest. The change of shift takes place at 8 a.m. Overtime rates are paid for hours of duty in excess of 24. There are no provisions for weekly rest. A paid annual holiday is granted, fixed at 16 days for firemen and ranging from 18 days to one month for officers according to rank.

The hours of service of firemen in *Charleroi* are 24, followed by a rest of the same length. The service is organised in two shifts, and no overtime is worked. Each fireman is entitled to 24 hours' rest every fortnight, and to 6 days of paid leave each year.

The personnel of the fire service of the city of *Liège* are divided into two teams, with alternating spells of duty of 24 hours, followed by 24 hours off duty. During the theatre season, from September to April, the off-duty staff are required, in accordance with a previously established roster, to be on duty for spells of about 5 hours in public theatres. These duty spells number about two per month for each man, for which they are remunerated. There is no special provision for weekly rest.

Members of the personnel are entitled to an annual paid vacation, varying according to their grade between 20 and 28 days. Officers are entitled to 30 days' paid vacation each year. There are 14 statutory holidays, which are granted in addition to the annual paid leave. The annual leave must be taken in three separate periods during the year.

The results of an enquiry made in the second half of 1949 by the Federation of Belgian Industries provide information on the hours of work of firemen in several large undertakings, including a metallurgical plant, a chemical works, a foundry, a tannery and leather factory, a telephone apparatus factory, a soapworks, various department stores, etc. According to their arrangements for fighting fires, these undertakings may be roughly classified into two groups : those (the larger number) having a fire fighting corps in the strict sense ; and those having a corps of part-time volunteers chosen among workers whose principal occupation is not fire fighting.

The arrangements in certain large department stores are typical of the first group. One store has a private corps of professional firemen affiliated with the Royal Belgian Federation of Firemen, while another employs professional firemen for day duty, a group of watchmen-firemen for watch duty at night and a group of auxiliary firemen recruited from the personnel. In two other stores, the firemen are recruited from the personnel and given training or exercises.

In one of the stores in question, the firemen are divided into two shifts, with each shift on duty for 24 hours and off duty for 24 hours. During the period on duty, the firemen may rest for two periods of 4 hours each, but are at the disposal of the undertaking whenever necessary to meet emergencies during the period. The annual paid holiday is 6 days after 1 calendar year's service, 12 days after 2 years' service and, in the case of persons who entered the service after 1 January, half a day for each month of service. Furthermore, to encourage regular attendance, a supplementary leave ranging from 1 to 5 days may be earned by those who have served not less than one year and who have been late on not more than 10 occasions, the number of days of leave varying inversely with the lateness record. In two of the other stores mentioned, the system is that of three 8-hour shifts.

In the undertakings which depend on volunteers chosen from among the workers, the organisation of the fire and guard service,

the hours of work and the material and equipment available vary with each establishment. Some degree of training is given to the volunteers. During the regular daytime hours of work in the undertaking, the usual practice appears to be for the volunteers to work at their principal occupation but to be ready for fire fighting whenever necessary. In some cases, volunteers take turns on watch duty after the regular working hours and at weekends.

Canada

Some Canadian provinces have legislation regulating the conditions of employment in fire departments. There are also collective agreements in various cities between the municipal authorities and the unions concerned. While conditions vary in the different areas, the particulars given below for the provinces of British Columbia, Ontario and Quebec may be taken to indicate the general situation.

The hours of work of firemen in *British Columbia* are governed by the Fire Department Hours of Labour Act and the Fire Department Two-Platoon Act, both of 1936. The essential provisions are :

(1) No fireman may be required to be on duty for more than 48 hours in any one week, unless an arrangement has been made whereby the hours of duty averaged over a number of weeks are not more than at the rate of 48 hours per week.

(2) A fireman shall be off duty for two full days of 24 hours each in each week, in addition to the periods when he is off duty under a two-platoon system of either of the following two types :

(a) 24 hours on duty followed by 24 hours off duty for each platoon, or

(b) 10 hours on daytime duty for one platoon, with the other platoon on night duty for 14 hours each day, and with each platoon alternating at least once in every seven days from day to night duty or *vice versa*.

The firemen in this province, in common with other workers covered by the Annual Holidays Act, 1946, are entitled to an annual holiday of at least one week with pay for every working year of employment.

Within the general framework of this legislation, there are, of course, minor variations in practice in the different cities in the province. The city of Vancouver can be taken as an example. The firemen in its fire department work a 48-hour week, on daytime duty in one week and on night-time duty in the next. They work 10 hours a day on the day shift and 14 hours a day on the night shift. Their tour of duty covers a four-day week and, based on a two-week period, equals a 48-hour week. Firemen with 1 to 15 years of service receive 2 weeks' vacation with pay, while those with 15 years' service or more receive 3 weeks' vacation with pay.

The hours of work of firemen in *Ontario* are governed by the Fire Departments Act, 1949. The essential provisions for full-time fire fighters are as follows :

(1) Under a two-platoon system :

(a) 24 consecutive hours of duty followed immediately by 24 consecutive hours off duty for each platoon, or

(b) 10 hours on daytime duty followed by 14 hours off duty for one platoon, and 14 hours on night-time duty followed by 10 hours off duty for the other platoon. The platoons alternate at least every two weeks.

(2) Under a three-platoon system: 8 hours on duty are to be followed by 16 hours off duty, with the platoons rotating their periods of duty and time off for the purpose of changing shifts at least every two weeks.

(3) Under other systems of platoons or hours of work: the maximum hours of duty may not be more than 72 hours on the average in any work week.

Of 44 full-time fire departments in the province of Ontario, the majority are on a 56-hour week, namely, a five-day week of 10 hours on the day shift or 14 hours on the night shift, an extra day being granted when the changeover occurs on a Sunday. Six fire departments are on a 48-hour week worked in three shifts of 8 hours each, and eight are on a 72-hour week, in most cases in the form of a six-day week of 10 hours' day shift or 14 hours' night shift, and in a few cases of 24 hours on duty followed by 24 hours off duty.

The Act also requires that every full-time fireman shall be off duty for one full day of 24 hours in every calendar week. Where a two-platoon system or three-platoon system is in operation, the 24 hours' release at the change of platoons is not regarded as a day off duty for this purpose.

The situation in the major cities in this province varies, but the system in Ottawa may serve as an illustration. According to the agreement between the municipal authorities and the Ottawa Fire Fighters Association of 7 March 1949, the fire fighting personnel of the Ottawa fire department are divided into two platoons, with one platoon working 10 day-hours and the other 14 night-hours and the platoons alternating every seventh day. Each employee working on the two-platoon system is entitled to 2 consecutive days off in each calendar week on a strictly rotating system, and is also entitled to be off duty on the Sunday between his period off duty on Friday and Saturday and his period off duty on Monday and Tuesday. It is permissible for a chief officer to grant the request of any two employees on the same platoon to exchange days off. Special hours of duty apply to certain personnel of specified types. All personnel other than probationary employees are entitled to

3 weeks' vacation with pay each year. In lieu of statutory or declared holidays, each employee who has completed 1 year's service is entitled, in addition to his annual vacation, to 4 days off duty with full pay and also 1 additional day off duty for each additional year of service, provided that the total of these two types of days off duty does not exceed 10 days in any calendar year.

In *Quebec*, according to the agreement concluded on 22 August 1949 between the City of Montreal and the local branch of the International Fire Fighters Association, firemen in that city are divided into a day shift working 10 hours and a night shift working 14 hours, and have the right to one day of rest in each week. In lieu of statutory and civic holidays and to compensate for any overtime worked during the year, there is a system of rotation for specified periods off duty during the year.

An employee who has served more than 4 months and less than 15 years is entitled to an annual vacation with pay of 15 days. An employee who has served more then 15 years is entitled to 21 days' vacation with pay.

The above summary of hours of work and related matters in some of the provinces and cities in Canada is perhaps sufficient to indicate the general situation in Canadian fire departments. There has been a noticeable trend towards shorter hours and longer annual vacations.

Czechoslovakia

The following working schedule is used in the Prague municipal fire service: 24 hours on duty, 24 hours " stand by " and 24 hours of rest. This rotation is continuous, and the hours of rest fall every third week on Sunday. During the period on duty, the firemen in question remain in the barracks. During the " stand by " period they participate in preventive fire care by inspecting houses and performing regular fire service in theatres and similar establishments or from time to time at any place where danger of fire might arise.

The working schedule of the fire service personnel in one of the largest Prague factories is as follows: 24 hours of service and 48 hours of rest. During the period of service the firemen are responsible for the maintenance of the fire equipment, inspect fire safety facilities in the factory, perform guard service and are on duty during the whole period.

In certain large industrial undertakings, the fire service personnel receive extra pay for overtime work, night work and work on days of rest, in accordance with a decision of the Ministry of Labour and Social Welfare dated 19 January 1949.

Holidays with pay are granted to firemen in common with other workers under the Annual Holidays with Pay Act of 22 February 1950,

which provides 2 weeks' holiday with pay for workers employed in the same establishment for not less than 11 months. The length of the annual holiday for certain workers is increased up to 4 weeks, varying according to age in the case of persons under 18 or over 50 years of age, or according to length of service.

Denmark

The following information relates to the conditions of work of firemen in the city of Copenhagen.

Subordinate officers and firemen who are detailed for turn-out duties (fire fighting, ambulance and emergency operations) are on duty for three 24-hour periods a week, totalling 72 hours, which is treated as equivalent to 48 hours of actual work. The period of duty starts at 8 a.m. The personnel are divided into seven relays, three of which are on duty and four off duty each day. Thus relays 1, 2 and 3 are on duty one day, relays 4, 5 and 6 on the following day, relays 7, 1 and 2 on the third day, and so on throughout the week until Sunday, when the relay that would have been next is taken off duty. Thus if relays 3, 4 and 5 are on duty on Saturday, relays 7, 1 and 2 will continue on the Sunday.

Each relay is composed of a permanent force of eight teams, each consisting of one sub-officer, one leading fireman, three firemen and a certain number of regular drivers, and a reserve force to replace those absent because of illness, holidays, training courses, etc.

The staff employed in workshops or depots work 8 hours a day and 48 hours a week.

Overtime pay is due for work in excess of the prescribed periods of duty or work. A supplement is paid for service on early or late duty (between various specified hours).

Sub-officers and firemen are entitled to 2 weeks' holiday with pay, or 3 weeks after 12 years' service, which corresponds to 7 and 10 duty periods respectively. In addition, time off equivalent to 4 duty periods is allowed each year.

Finland

The working schedule or hours on duty of firemen in Finland is limited by the Hours of Work Act of 2 August 1946 to 8 a day and 47 a week, in accordance with the Order of 30 December 1946 respecting the application of the Act to public officials and employees, which specifies that, with some exceptions, the provisions of the Act shall apply also to such municipal officials or employees as firemen, corporals, sergeants and men in charge of fire engines.

The Labour Council may authorise exceptions to the above maximum limits in the case of work of vital public importance. This has been done, subject to stipulated conditions and for a year at a time, for members of fire brigades, whose regular working

time has been extended in the three largest cities to an average of 67.2 hours a week, in other cities and towns to an average of 72 hours a week, over a period of five weeks. Time on duty at the fire station is counted as working time. If a fireman is required to be ready while at home to turn out for duty, such time must be compensated or half the time must be counted as working hours.

Under the Act employers are required to draw up a working timetable, showing the hours at which work begins and ends and the breaks for meals and rest. In the event of fire, exceptions to the system are naturally allowed.

With regard to weekly rest, any worker or employee covered by the Hours of Work Act is entitled to an uninterrupted rest of at least 30 hours, preferably including Sundays, or when that is not possible, at some other time during the week.

Under the Annual Holidays with Pay Act of 27 April 1946 (replacing an earlier Act of 21 April 1939) members of fire brigades who have entered into a contract of employment are entitled to a paid annual holiday, the length of which depends on their period of service. The provisions of the Act were extended to public officials and municipal employees in certain cases by an Order of 21 April 1939. Several local authorities have granted their employees longer holidays than those stipulated by the Act.

France

There are no general rules governing the hours of work of professional firemen in France. Conditions of work are determined locally, and may vary according as the firemen are resident or not, thus depending on the type of accommodation that can be given to the firemen.

For non-resident firemen, hours of work are often fixed at 24 hours, followed by 24 hours' rest. Besides fire fighting, for which they are usually organised in two teams, the firemen are responsible during their 24 hours' spell of duty for the transport of injured and sick persons and the maintenance of equipment. On most days they have physical training during half an hour to an hour and they make rounds of inspection to the hydrants in their district. They also do duty at places of entertainment, for which they receive extra remuneration.

For firemen who are residents in the station the period of duty varies between 24 hours and 4 consecutive days, followed by a day of rest. The most common arrangement appears to be 3 days' duty followed by one day of rest. While on duty firemen are organised in three teams, the third being a reserve team to replace the teams called out to a fire. Firemen in the reserve team may remain in their quarters but may not leave the station.

Owing to the system of organisation of the service, there is no provision for a weekly rest. In a few districts, however, one or two extra days of rest are granted each month. It must be noted also that

on Sundays there is no miscellaneous duty outside of fire fighting and ambulance work.

The length of the annual paid holiday is one month, including Sundays and statutory holidays.

The minor variations in different cities and localities may be illustrated by the case of Lyons. The fire brigade of this city works in 24-hour spells of duty, beginning at 7 a.m. in summer and 8 a.m. in winter, with 24 hours' leave granted every four days. An annual holiday with pay of 24 working days is given.

The above information applies to the firemen employed by municipal authorities, who have the status of local government personnel, except as regards special provisions for the fire fighting service.

With regard to fire fighting services in private undertakings, their hours of work are regulated in certain industries and undertakings by special Decrees issued under the Forty-Hour Week Act of 21 June 1936. For example, in the chemical industry a Decree of 2 March 1937 provides that the hours of work of members of a factory's fire fighting service shall not exceed 56 on an average calculated over a period of 3 weeks, subject to a maximum of 12 hours a day. Similar provisions are found in the Decrees regulating hours of work in a number of other industries and undertakings, such as the metallurgical and metalworking industries, the textile industry, glassworks, banks and insurance undertakings, etc.

Italy

The organisation of fire fighting services in Italy is regulated by an Act of 27 December 1941 and Decrees of 16 March 1942.

Firemen are on duty 24 hours, followed by 24 hours of " conditional " rest. During active duty hours the available personnel are formed into teams of five to ten men, the teams being assigned to first, second and third alarm duty, etc.

On the conditional rest days, firemen are assigned to observation or inspection duties on premises where public entertainments take place. Such assignments vary in duration from 1 to 7 hours, and special scales of remuneration are applicable in respect of these supplementary hours of work.

The permanent staff of the fire services are entitled to 30 days' paid holiday a year.

Netherlands

The information available on conditions of work of firemen in the Netherlands dates back to 1947, but may give some indication of the situation. In that year the average weekly period of duty of firemen was about 84 hours. The brigade was usually divided into two shifts, with each shift on duty for 24 hours and off duty for 24 hours.

Annual holidays with pay varied with rank, being fixed at 18 days for firemen, 21 days for corporals, 26 days for sergeants, 26 days for assistant officers and 28 days for commandants.

New Zealand

The general organisation of the hours of work of firemen in New Zealand can be ascertained from various awards and orders made by the Court of Arbitration under the Industrial Conciliation and Arbitration Act or other relevant legislation.

For example, an award of 10 September 1946, as amended on 21 November 1947 by a decision of 27 May 1947, regulates the conditions of employment of firemen in the Northern (except Auckland City), Taranaki, Wellington (except Wellington City), Nelson and Canterbury (except Christchurch City) industrial districts. Each fireman is allowed 24 hours of continuous leave of absence, without deduction of pay, commencing at 9 a.m. every third day; however, in cases where an emergency—*i.e.*, fire duty or sickness—prevents such leave being taken, it must be taken subsequently. In lieu of statutory and special holidays, Saturdays and Sundays, a weekly sum is paid in addition to the ordinary weekly wage rate.

With the exception of the urgent work, such as fire duties or repair to the engines, all daily routine work finishes at 1 p.m. on weekdays (12 noon on Saturday). No routine work is done on Sundays except cleaning quarters or other necessary work.

Each fireman, within each 6 months' continuous service, is granted 28 consecutive days, including Sundays, of leave with pay, except that in Hamilton, 14 days' leave is taken within each 3 calendar months.

Minor variations in conditions, for example, in the detailed arrangement of hours of routine station work and the provision of 24 hours' paid leave after every fourth day, etc., may be found in other localities.

Norway

There are no general standards for conditions of work for firemen in Norway. Firemen are municipal employees and their conditions of work vary somewhat in the different municipalities as regulated by special collective agreements in each municipality.

However, the period on duty for regular firemen in all localities is 24 consecutive hours, with 24 hours, and in some cases 48 hours, off between such periods. Some periods of workshop and other work service are included in the weekly schedule, but the free hours between duty periods are never less than 24. The total weekly period of service, including guard service and work service, varies from 60 to 70 hours a week according to the municipality. No special weekly rest period is fixed, apart from the abovementioned rest of 24 hours between periods on duty.

Special overtime pay is granted for work in addition to the fixed period of service, in some municipalities at the same rates as for other municipal employees, in others at special rates. In some cases a corresponding number of hours off are substituted for overtime pay.

All workers in Norway are entitled each year to 3 weeks' holiday with pay under the Holidays with Pay Act of 1947.

Poland

A circular of the Ministry of Labour and Social Welfare dated 30 January 1948 contains provisions on the hours of work of professional firemen in the fire brigades of Polish cities, which supplement the Order of 26 January 1922, as amended by the Order of 3 October 1930, regulating the hours of work of persons employed in watchkeeping, including members of fire brigades. The Order limited the hours of work of watchmen, etc., to 12 a day, but if such persons during their period of duty perform other subsidiary work not connected with watchkeeping, their hours of work could be extended from 8 to not more than 10 in the day in case of proved necessity, under a previous permit from the labour inspector of the district, and to not more than 12 hours under a similar permit from the labour inspector of the region. While recognising that the prevailing system in nearly all city fire brigades in Poland, of 24 hours of work followed by 24 hours off duty, does not correspond strictly to the provisions of the Order, the Circular of 30 January 1948 authorises the application of such a system, on condition that the hours of actual work, such as fire fighting, exercises, etc., do not exceed 8 during the 24-hour period. In case of necessity to extend the period of actual work, for instance, during the extinction of fires, all hours of actual work exceeding 8 in the day must be paid as overtime.

The hours of work of firemen and industrial guards in State industries are specified in a communication, dated 28 June 1949, of the State Economic Planning Commission to all the Ministries concerned. In the case of firemen, one of three systems may be chosen: *(a)* 12 hours' service followed by 24 hours' rest; or *(b)* 12 hours' service followed by 12 hours' rest; or *(c)* 24 hours' service followed by 24 hours' rest. If system *(b)* is applied, one day off per week must be provided, and the change of shifts must be made at least once a fortnight. Under system *(c)*, a supplementary 12 hours' rest must be given in addition to the fixed 24 hours a week, and the timetable must be so arranged as to allow the worker the possibility of 8 hours' rest at the place where he is on duty. This rest may be interrupted only in the case of an alarm. This system may be applied only in full agreement with the workers concerned. Under system *(a)*, the worker has no right to a weekly day off.

For industrial guards, the system is that of 12 hours' service followed by 24 hours' rest or 12 hours' rest. In the latter case,

one day off in the week must be provided, and the shifts have to be changed at least once a fortnight. If the former system is applied, the worker is not entitled to a weekly day off.

With regard to annual holidays, the Annual Paid Holidays Act of 16 May 1922, as amended, is applicable. Under a recent amending Act of 20 March 1950, the annual paid holiday is fixed at 12 days after 1 year of employment, 15 days after 3 years and 1 month after 10 years.

Sweden

The general situation regarding hours of work of firemen in Sweden may be indicated by data for the ten largest cities. The following table shows the schedule of hours of actual work and of hours when firemen are only on guard during their days on duty. The rotation between days on duty and free days is on a continuous system.

City	Number of hours on duty per 24-hour period				Free days
	Hours of work		Hours on guard		
	Weekdays	Sats.	Weekdays	Sats.	
Stockholm	6	4	18	20	Every other day plus every ninth day (5 out of 9 days are free)
Göteborg	5 ½	4 ½	18 ½	19 ½	15 free days a month
Malmö	7 1/12	3 7/12	6 11/12	20 5/12	Every other day
Norrköping	7	5	17	19	Every other day
Helsingborg ...	5 ¾	5 ¾	18 ¼	18 ¼	Every third day
Örebro	6	4	18	20	Every other day
Uppsala	7	5	17	19	Every other day
Borås	7	4	17	20	Every other day
Västerås	6	4	18	20	Every other day
Eskilstuna	6 ¼	4 ½	17 ¾	19 ½	5 free days in every 13-day period

The total hours of work per week vary from town to town, ranging, according to estimates for 1947, from 75 to 112 hours.

Unlike the practice in most other countries, the annual holiday granted to firemen in Sweden varies in length according to the age of the fireman, as follows : (1) up to and including the calendar year in which the fireman reaches the age of 29 years, it is 18 days ;

from the year in which he reaches the age of 30 years, it is 26 days in Stockholm and 22 days in other towns ; from the year in which he reaches the age of 40 years, it is 28 days in Stockholm and 26 days in other towns.

Switzerland

The six largest cities in Switzerland, namely, Basle, Berne, Geneva, Lausanne, St. Gallen and Zurich, employ forces of professional fire fighting personnel, which total approximately 250 men and form the full-time municipal corps. In addition, it is interesting to note that in most cantons participation in the fire fighting service is compulsory for men within specified age limits or else they pay a special fire tax.

With regard to the organisation of hours of work, the situation in the Geneva fire brigade may be taken as an example. The corps is divided equally into two groups, each of which is on duty for 24 consecutive hours and off duty for 24 hours. The change of shifts takes place at 7 a.m. Meals are taken at home, with one half of the group going home at midday between 11 a.m. and 12.30 p.m. and in the evening between 6 p.m. and 7.30 p.m., and the other half between 12.30 p.m. and 2 p.m. and between 7.30 p.m. and 9 p.m. Daily maintenance and other routine work is limited to 8 hours of actual work. On Saturday afternoon, Sunday and statutory holidays, no manual work is required, except of course in the case of fires. For the group whose shift falls on Sunday, there is a compensating free period of 12 hours.

There are certain minor variations in the other cities. For instance, Zurich has a somewhat different system from the 24 hours on duty and 24 hours off duty prevailing in most of the cities mentioned. The system of taking meals at home or at the station house also varies. An indication of these variations is given by the following figures for average weekly hours of duty in 1946 : 77½ hours in Zurich and Basle, 84 hours in St. Gallen and 86 hours in Berne.

With regard to annual holidays with pay, the duration of the holiday generally depends on the length of service and the age of the fireman. For example, in Geneva and Basle, it ranges from a minimum of 15 days or 2 weeks to a maximum of 4 weeks.

United Kingdom

The hours of work of firemen in the public fire services in Great Britain are governed by various regulations made under the Fire Services Act of 1947. The normal duty system for full-time members of a fire brigade below the rank of station officer provides for an average period of 60 hours a week worked over a cycle of weeks. On an average, two 24-hour periods off per week must be allowed,

which are frequently, but not necessarily, consecutive. Each period of 24 hours is divided into a day shift and a night shift; the details of shift organisation at individual stations are settled by the local fire authorities after consultation with the accredited representatives of the firemen. A system of rotation of duty and off-duty periods is drawn up for each fire station along the general principles stated above, and to ensure that the rota provides as equal as possible a number of men on duty in each shift, that each man's rota leave days change each week in a regular progressive manner, etc.

Owing to shortage of personnel, the normal duty system cannot be applied in some areas, and the firemen there work a period of 24 hours on duty followed by 24 hours off duty. They are given an additional period of 12 hours free of duty once every 21 days.

While the regulations contain no specific provision for overtime, equivalent time off duty is usually given for work performed by firemen after their normal scheduled hours. In some smaller towns, where the fire stations are manned jointly by part-time firemen and full-time firemen, the latter work an average of 60 hours a week during the daytime only, while the part-time firemen and volunteers from the full-time firemen cover the night-time duties.

With regard to the 60-hour week, it may be of interest to quote the following statement of the General Secretary of the British Fire Brigades Union at the International Conference of Firemen in 1947:

> Now we have been able to introduce nationally the 60-hour week, ... but we are not satisfied with 60 hours per week. We see no reason why firemen should be expected to put in longer hours than their comrades in other trade unions in industry. We have put on record our application for an improvement in our hours of duty to 40 per week. We make no attempt to hide the fact that, in the present economic situation in which our country finds itself, it would be unwise and unrealistic to press the Government and the local authorities for the speedy introduction of the 40-hour week; but we are not prepared to forgo that advance without telling the Government why we are postponing pressing for this claim, and we reserve the right to return to the battle when we think fit. [1]

The annual leave with pay for full-time members of fire brigades below the rank of station officer is 21 days, with progressive increases in the number of days for officers of higher rank. A recent regulation, which came into effect on 30 July 1949, provided for an additional 3 days of paid leave on public holidays.

United States

The hours of work of paid full-time firemen in the United States display in general a gradual trend from the continuous-duty system

[1] *Report of the International Conference of Firemen, op. cit.*, p. 15.

prevailing before the turn of the century to a progressive reduction of hours through the two-platoon or, in some cases, three-platoon system. The change from the hardships of the continuous-duty system was achieved only after years of demands and suggestions, culminating in the initiation of the two-platoon system, which involved the division of the personnel in a fire department into two shifts, with one group of men working during the day and the other group during the night; the shifts were rotated periodically.

This version of the two-platoon system was at first tried unsuccessfully in New York City during December 1904 to March 1905 and in Chicago and a number of other cities. Subsequently, however, some improvements were made in the operation of the system, such as giving the night shift permission to sleep while on duty; and, with the adoption of a 10-hour day shift and 14-hour night shift, it became established in the large city fire departments. By the nineteen-twenties the system had become increasingly prevalent, with a further change introduced in numerous cities, whereby each shift worked 24 hours, followed by a free period of 24 hours. This system' with minor variations, remains in effect in a large number of cities and towns in the United States, though in some a three-platoon system is used.[1]

While the general trend towards shorter hours is unmistakable, the total hours worked during a week by firemen vary considerably in different cities and towns. The New York City fire department worked a 45.8-hour week in January 1949; Boston, 48 hours; Toledo, 56 hours; San Francisco, 58 hours; Birmingham (Alabama), 60 hours; St. Paul, 65 hours; Bridgeport (Connecticut), 70 hours; Dallas, 72 hours; Omaha, 84 hours. With some exceptions, the longer week, such as 72 hours or 84 hours, appears to be more common in the smaller cities and towns, particularly those with a population of less than 100,000. On the other hand, an increase in the number of fire departments working 48 hours has been observed in recent years.[2] Since the change of hours depends on local legislation, or sometimes public referendum, some areas have made more rapid advances than others. It should also be noted, however, that in a few cases the introduction of a 40-hour week has resulted in dissatisfaction, both among the firemen and in the operation of the department, as in Columbus (Ohio) in 1947-1948, where this led to the abolition of the 40-hour week for fire fighting personnel and the adoption of a working schedule of 24 hours on duty and 48 hours off duty for all fire fighters in the department.[3]

With regard to weekly or monthly rest schedules, in January 1949 4 days off per month were granted in most cities and towns, and

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[1] A detailed account of the historical development of this problem and of various other aspects of firemen's conditions of work in the United States and Canada may be found in James Joseph GIBBONS: *The International Association of Fire Fighters* (Washington, D.C., 1940), pp. 41-43, etc.

[2] Cf. *International Fire Fighter*, October 1948, p. 26.

[3] *Idem*, January 1949, p. 12.

6, 7, 8 or 9 days off per month in a number of others, including Chicago, 6 ; Detroit, 7 ; Los Angeles, 8 ; Newark, 9. The " day off " is equivalent to 12 hours except in a 48-hour week. For a small number of localities no days off were listed.

Annual vacations with pay have become more general during the last thirty years and are granted in most cities and towns. The length is usually 2 or 3 weeks, with some exceptions, such as 28 days for firemen and 30 days for officers in New York City. Although in some cases no annual vacations are granted, the general trend towards providing not only annual vacations, but also more days of rest and shorter hours, bears witness to the efforts of organised firemen to secure better conditions of work and to the growing public awareness of the problems of the firemen.

Conclusions

The foregoing brief review of various aspects of the hours of work and related problems of firemen in seventeen countries suggests that not only are there obviously no uniform standards on an international scale at the present time, but there are frequently variations between different localities even within a particular country. The principal reason lies probably in the fact that the fire fighting service is often under local and municipal control, and that the different needs and resources of each locality necessitate variations in the service.

Similarly, the form of the regulations in question presents considerable variety. In some countries, national legislation regulates these matters directly. In others, such as the United Kingdom, there is general national legislation on fire fighting services, but the details of conditions of employment are specified in the regulations issued under the authority of the general Act and, furthermore, the exact situation in individual fire stations is determined by collective agreements within the scope of the legislation and regulations. In some countries, such as Canada, there is no national or federal legislation but the conditions of employment are regulated in some provinces by provincial legislation. In some of the countries considered courts of arbitration or similar tribunals often make awards and decisions governing firemen's hours of work.

As noted in the introduction, the status of members of the fire services of private undertakings differs from that of firemen in the public service. The extent to which the former are covered by the general hours of work legislation also varies in the different countries. In France, for example, decrees regulating the application of the 40-Hour Week Act of 1936 in particular industries or undertakings have specifically provided for a working week for firemen of 56 hours averaged over three weeks, subject to a maximum of 12 hours a day. In certain respects, the duties of a fireman

are similar in nature to those of staff employed in surveillance, guard or watch service, in which two factors are usually involved: *(a)* attendance, which is continuous over a period of duty; and *(b)* actual work, which is not continuous. In some national laws or regulations, the scope of intermittent work is defined to include staff employed in surveillance, guard or watch service, and the fire service, although not expressly specified, may thus be deemed to be included by implication. In some countries the national hours of work legislation makes direct mention of fire brigades.

The provisions in the national hours of work legislation which relate to fire brigades, surveillance staff or guard or watch service, as the case may be, may embody one or more of the following solutions:

(a) complete exemption from the general regulations limiting hours of work;

(b) the fixing of a daily or weekly number of hours in excess of the general limit, as in the abovementioned French decrees;

(c) extension of hours of duty, subject to the condition that hours of actual work shall not exceed a specified limit, as in Poland.

While bearing in mind the large area of differences between countries and between localities as to organisation, legal provisions, needs and resources, we may nevertheless venture to make some general observations.

It would appear that the organisation of hours of work, rest periods, leave and holidays of firemen in most of the countries considered has been in process of gradual liberalisation during the past several decades.[1] The rate of progress differs in different countries and the process has taken one or more of the following forms: reduction of hours of work; limitation of hours of actual work as distinct from hours of duty; establishment of daily or weekly limits to hours; introduction of shift or platoon systems; increase of rest periods, annual holidays, long-service leave, etc.

At the present stage of development, there is no one type of arrangement of working hours that may be considered as common to all the countries reviewed. Indeed, the variety of different systems of duty, as demonstrated by the replies to questionnaires to the unions represented at the International Conference of Firemen in 1947, was described on that occasion as ranging " between the two extremes of the eight-hour industrial day and continuous duty ".[2] Despite this variety, however, it appears that in some of the countries considered here the system of 24 hours' duty followed by 24 hours off duty is more common than other systems. The introduction of liberal annual paid vacations is another fairly common trend in the countries examined.

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[1] Emergency periods, such as the war years, are of course excepted.

[2] *Report of the International Conference of Firemen, op. cit.*, p. 11.

The comparative popularity of the system of 24 hours' duty followed by 24 hours' rest in some countries illustrates an interesting aspect of the problem of firemen's hours of work : the grouping of the hours on duty and off duty. The following statement by the Secretary-Treasurer of the International Association of Fire Fighters (the organisation of firemen in Canada and the United States) at the abovementioned Conference puts the point :

> Today we have as an objective a 48-hour week, and in many cities fire fighters now work a 48-hour week. There is a lot of discussion among firemen as to the method by which it should be operated. In our country we say that the firemen should not be expected to work more than 48 hours per week, but our members say that they should be the ones to determine the method and how it should be operated. As a method of operation, our members are not very friendly towards the straight 8-hour day plan ; the trade union movement is ; the firemen have a peculiar make-up, and they prefer to work and group their hours so that they may have a longer time off. In most of the cities throughout the United States and Canada they work 24 hours on and 24 hours off, not to exceed an average of about 63 hours at the present time. Ten years ago that average was 72 hours, and we hope, before long, that everyone will be working the 48-hour week ; but they are insistent that in each instance, if they want to work 24 hours on and 24 hours off, they shall have that privilege. [1]

Whatever the present state of the question, it is evident that the regulation of firemen's hours of work on progressive lines will continue to be important to the men themselves, to the authorities and to all who are directly or indirectly interested in an efficient fire fighting service.

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[1] *International Fire Fighter*, November 1947, p. 7.

STATISTICS

The periodical statistics of labour conditions in different countries are at present published in the *Review* as follows:

Monthly: Unemployment and employment; cost of living and food prices.

Quarterly (February, May, August, November): Wages and hours of work.

Unemployment and Employment

The tables show:

I. Number of unemployed or applicants for work.

II. Index numbers of the *general level* of employment.

III. *(a)* Index numbers of the level of *employment in manufacturing.*

(b) Index numbers of total hours worked in *manufacturing employment.*

Changes in the Tables

Table II.

Czechoslovakia and *Hungary.* The series have been discontinued owing to the lack of current data.

Table III.

Czechoslovakia and *Hungary.* The series have been discontinued owing to the lack of current data.

Japan. A new series covering employed wage and salary earners only has been substituted for the previous series relating to all employed persons.

Cost of Living and Food Prices

The table shows index numbers of the cost of living covering generally the main groups of expenditure, *viz.*, food, fuel and light, clothing, rent and miscellanous, and, in the lower half, the corresponding index number of retail food prices.

Changes in the Table

The series for *Czechoslovakia* and *Hungary* have been omitted, owing to the lack of current data.

Switzerland. From March 1950 a revised series, with August 1939=100 as base, has been introduced. The weights used are as follows:

Food	40
Heat and light	7
Clothing	15
Rent	20
Cleaning	3
Miscellaneous	15
Total	100

SYMBOLS AND TYPES EMPLOYED

. = not available or do not exist.
... = not yet received.
* = provisional.
— = nil or negligible.
r = revised since previous issue.
e = represented by a few branches only.
o = relates to men only (wages tables).
——— = when placed between two figures of a series, that the former has been replaced by another or revised series.

Thick-faced type: index number **(100)** in base year.
Italics: index numbers based on another year than 1937.
Figures in brackets: series subject to certain reservations.

The countries are arranged by continents in the alphabetical order of their English names.

Note: Figures for the separate industries, etc., covered by these series are given in tables VI, IX, XI and XIV of the *Year Book of Labour Statistics, 1947-48*; index numbers of the groups fuel and light, clothing, and rent, covered by the cost-of-living index numbers, are given in table XIX.

Further information on the scope and significance of these statistics is given in each January issue of the *Review* (see Vol. LXI, No. 1, January 1950, pp. 65-76). For notes on the methods of computation, see the descriptions commencing with the June 1948 issue of the *Review*.

Unemployment and Employment

TABLE I. STATISTICS OF UNEMPLOYMENT

Date	Africa		America			
	Nigeria [1]	Union of South Africa	Canada			
	V	V	I [2]		II	
	Unemployed (registered)	Unemployed (registered)	Unemployed (estimated)		Unemployed (insured)	
				%		%
1937	.	4 510	337 000	12.5	.	.
1938	.	5 279	407 000	15.1	.	.
1939	.	6 167	386 000	14.1	.	.
1941	.	3 543	370 000	8.0	.	.
1942	.	4 256	238 000	5.3	.	.
1943	.	5 502	99 000	2.2	.	.
1944	7 272	3 731	82 000	1.8	10 454	0.5
1945	7 562	5 383	172 000 [3]	3.8 [3]	41 139	1.9
1946	7 264	5 390	143 000	3.0	96 760	4.5
1947	6 874	10 266	98 000	2.0	68 254	3.0
1948	6 351	12 173	103 000	2.1	88 909	3.8
1949	...	15 138	137 000	2.7	135 624	5.9
1949 : May	7 544	12 751	.	.	95 832	4.2
June	6 969	15 033	103 000	2.0	80 391	3.5
July	4 780	16 308	.	.	79 902	3.5
Aug.	5 149	18 462	98 000	1.9	80 813	3.5
Sept.	...	19 127	.	.	83 525	3.6
Oct.	...	18 642	147 000	2.8	105 937	4.6
Nov.	...	18 626	.	.	152 269	6.6
Dec.	...	18 908	.	.	222 064	9.7
1950 : Jan.	...	15 138	.	.	297 238	12.2
Feb.	...	20 108	.	.	286 163	11.7
Mar.	...	19 629	312 000	6.1	265 382	10.9
April	...	19 121	.	.	209 905	8.6
May	...	...	.	.	...	...
Persons cov. (thousands)	.	.	5 115 [4]		2 298 [5]	

Date	America (concl.)				Asia		
	United States		Puerto Rico		Union of Burma [6]	India	Israel
	I		I		V	V	V
	Unemployed (estimated)		Unemployed (estimated)		Applicants for work registered	Applicants for work registered	Unemployed (registered) [7]
		%		%			
1937	7 700 000	14.3	.	.	.	.	.
1938	10 390 000	19.0	.	.	.	.	.
1939	9 480 000	17.2	.	.	.	.	.
1941	5 560 000 [8]	9.9 [8]	.	.	.	.	.
1942	2 660 000	4.7	.	.	.	.	.
1943	1 070 000	1.9	.	.	.	.	.
1944	670 000	1.2	.	.	.	.	1 409
1945	1 040 000	1.9	.	.	.	.	1 237
1946	2 270 000	3.9	80 000 [9]	12.0 [9]	.	.	1 870
1947	2 142 000	3.6	76 000	11.0	3 116 [10]	.	2 772
1948	2 064 000	3.4	71 000	10.3	2 614	224 900	1 320 [11]
1949	3 395 000	5.5	79 000	11.3	844	293 043	6 351
1949 : May	3 289 000	5.3	47 000	6.9	761	291 713	4 905
June	3 778 000	6.0	57 000	8.1	812	312 734	8 553
July	4 095 000	6.4	65 000	9.1	872	326 300	9 683
Aug.	3 689 000	5.8	80 000	11.3	855	337 002	9 607
Sept.	3 351 000	5.3	94 000	13.3	768	333 897	7 979
Oct.	3 576 000	5.7	100 000	14.0	637	310 272	7 386
Nov.	3 409 000	5.4	115 000	15.8	573	291 584	8 541
Dec.	3 489 000	5.6	117 000	16.0	573	274 335	10 007
1950 : Jan.	4 480 000	7.9	131 000	18.1	...	269 091	...
Feb.	4 684 000	7.6	...	...	...	265 295	...
Mar.	4 123 000	6.7	...	...	...	265 962	...
April	3 515 000	5.7	...	...	...	281 972	...
May	3 057 000	4.9	...	...	...	...	...
Persons cov. (thousands)	62 105 [4]		702 [4]		.	.	.

I. Labour force sample surveys.
II. Compulsory unemployment insurance statistics.
III. Trade union fund returns.
IV. Trade union returns.
V. Employment office statistics.

[1] Lagos. [2] Up to 1944, the figures are estimates. [3] Nov. [4] Average for 1949. [5] Apr. 1948. [6] Rangoon. [7] Daily average during the month. [8] Commencing 1940, estimates obtained from monthly sample surveys of the labour force. [9] Mar.-Dec. [10] June-Dec. [11] Jan.-Mar., July-Dec.

TABLE I. STATISTICS OF UNEMPLOYMENT *(cont.)*

Date	Asia *(concl.)*				Europe			
	Japan		Pakistan		Austria		Belgium	
	I [1]		V		V		II	
	Unemployed (estimated)		Applicants for work registered		Unemployed (registered) [2]		Unemployed (insured)	
		%				%		%
1937	295 443	3.7	.		320 961	.	125 929	13.8
1938	237 371	3.0	.		244 000	.	173 913	18.4
1939	.	.	.		66 000	.	195 211	19.3
1941	.	.	.		.	.	.	.
1942	.	.	.		.	.	.	.
1943	.	.	.		.	.	.	.
1944	.	.	.		.	.	.	.
1945	.	.	.		.	.	144 579 [3]	9.3 [3]
1946	1 590 318 [4]	5.4 [4]	.		74 105	.	67 292	4.5
1947	671 780 [5]	1.9 [5]	.		31 737	1.7	67 560	3.5
1948	240 000	0.7	77 983		43 409	2.3	129 203	6.4
1949	380 000	1.0	70 996		91 238	4.6	234 896	11.7
1949 : May	430 000	1.2	63 130		81 099	4.1	212 617	10.6
June	350 000	0.9	63 887		71 458	3.6	215 316	10.7
July	370 000	1.0	66 325		67 676	3.4	220 469	11.0
Aug.	340 000	0.9	72 953		64 855	3.3	214 683	10.7
Sept.	470 000	1.3	77 656		63 390	3.2	228 393	11.4
Oct.	350 000	0.9	81 866		62 575	3.1	251 077	12.5
Nov.	330 000	0.9	86 327		80 498	4.0	259 387	12.9
Dec.	340 000	0.9	86 490		133 651	6.7	265 075	13.2
1950 : Jan.	400 000	1.2	89 303		182 796	...	308 968	15.4
Feb.	430 000	1.3	86 044		189 444	...	264 261	13.2
Mar.	460 000	1.3	89 496		147 722	...	236 839	11.8
April	...	...	99 496		119 659	...	219 955	11.0
May	...	...	...		...	...	...	...
Persons cov. (thousands)	36 805 [6]		.		1972 [6]		2 001 [7]	

Date	Europe *(cont.)*						
	Denmark		Finland	France		Germany [8]	
	III		V	[9]	V	[10]	
	Unemployed (trade unionists)		Unemployed (registered) [11]	Unemployed (on relief)	Applications for work registered	Unemployed (registered) [12]	
		%					%
1937	95 630	21.7	3 695	354 554	379 994	.	.
1938	97 707	21.3	3 602	373 641	402 186	.	.
1939	88 924	18.4	3 300	381 902 [13]	418 413 [13]	.	.
1941	97 404	18.4	3 384	292 649	394 534	.	.
1942	81 276	15.1	1 561	70 312	123 957	.	.
1943	58 480	10.7	923	19 878	41 552	.	.
1944	46 420	8.3	2 018	.	.	.	.
1945	76 232	13.4	5 312	15 813	68 436	.	.
1946	51 636	8.9	—	15 663	56 633	.	.
1947	51 998	8.9	—	7 389	45 738	595 242 [14]	.
1948	51 644	8.7	—	16 737	77 803	603 858	4.3
1949	59 041	9.6	25 683	39 748	131 062	1 262 997	8.5
1949 : May	46 756	7.7	15 920	39 817	132 671	1 256 889	.
June	28 858	4.7	3 911	40 847	128 811	1 283 302	8.7
July	30 710	5.0	940	41 126	122 082	1 302 857	.
Aug.	30 615	5.0	1 213	42 196	118 601	1 308 091	.
Sept.	38 335	6.2	4 752	43 908	132 837	1 313 691	8.8
Oct.	54 002	8.7	20 967	42 571	142 817	1 316 572	.
Nov.	61 534	9.9	46 893	43 423	149 022	1 383 832	.
Dec.	113 505	18.2	58 075	46 396	153 545	1 558 469	10.3
1950 : Jan.	113 232	18.1	52 873	52 477	172 972	1 897 644	12.5
Feb.	92 072	14.7	54 858	58 857	185 386	1 981 908	13.0
Mar.	57 223	9.1	55 776	61 638	182 202	1 851 879	12.2
April	46 296	7.4	33 288	60 469	174 963	1 783 400	11.8
May	26 689 *	4.3*	9 434	...	...	1 668 000*	...
Persons cov. (thousands)	615 [6]		.	.	.	14 855 [6]	

For an explanation of the Roman numerals used in this table, see p. 660.

[1] Pre-war figures are official estimates. [2] Prior to 1947, applicants for work registered. [3] Prior to Oct. 1944, voluntary unemployment insurance statistics. [4] Census of 26 April. [5] Census of 1 Oct. [6] Average for 1949. [7] June 1949. [8] Federal area. [9] Public relief fund statistics. [10] Labour registration statistics. [11] Prior to 1945, applicants for work registered. [12] Figures prior to Sept. 1948 included all unemployed persons available for work under Order No. 3 of the Allied Control Authority, whether actually seeking work or not. [13] Jan.-Aug. [14] Mar.-Dec.

TABLE I. STATISTICS OF UNEMPLOYMENT *(cont.)*

Date	Europe *(cont.)*					
	Ireland			Italy	Luxembourg	Netherlands
	II		V	V	[1]	V
	Unemployed (insured)		Applicants for work registered	Unemployed (registered)	Unemployed	Unemployed (registered)
		%				
1937	.	.	81 760	874 000	18	368 904
1938	.	.	88 714	810 000	92	353 663
1939	55 165	15.6	93 074	.	420	295 630
1941	50 967	14.6	74 656	.	.	.
1942	48 846	14.2	76 887	.	.	.
1943	41 194	12.5	66 884	.	.	.
1944	36 263	11.3	59 047	.	.	.
1945	33 964	10.6	58 999	.	.	137 260 [3]
1946	35 067	10.6	59 726	.	15	88 742
1947	33 266	9.3	55 623	1 620 000	50	45 889
1948	35 129	9.4	61 203	1 748 000 [3]	17	42 422
1949	34 906	9.0	60 606	1 672 708	...	62 335
1949 : May	36 907	9.5	67 250	1 704 931	12	55 100
June	32 395	8.3	47 324	1 551 725	8	48 726
July	29 230	7.5	42 409	1 530 547	6	45 816
Aug.	30 553	7.9	43 928	1 512 378	12	49 972
Sept.	28 023	7.2	41 592	1 484 149	23	47 086
Oct.	29 027	7.5	43 288	1 502 327	...	54 507
Nov.	31 390	8.1	59 092	1 592 248	...	67 252
Dec.	29 708	7.6	58 621	1 792 863	...	87 862
1950 : Jan.	36 270	9.4	69 776	1 839 309	...	107 663
Feb.	38 030	9.8	72 098	1 785 927	...	104 762
Mar.	36 414	9 4	67 328	...	...	89 309 [2]
April	35 224	9.1	66 230	...	...	...
May	32 110	7.9	59 026	...	...	...
Persons cov. (thousands)	389 [4]		.	.	.	.

Date	Europe *(cont.)*					
	Norway		Portugal	Spain	Sweden	
	V		V	V	IV	
	Unemployed (registered)		Unemployed (registered)	Unemployed	Unemployed (trade unionists)	
		%				%
1937	29 881	.	17 158 [5]	.	67 351	10.8
1938	30 296	.	16 570 [5]	.	66 990	10.9
1939	28 251	.	17 885 [5]	.	63 722 [6]	9.2 [6]
1941	19 181 [7]	2.7 [7]	13 626 [5]	450 014	85 018	11.3
1942	4 747	0.7	10 185 [5]	294 530	56 938	7.5
1943	437	0.1	4 968 [5]	225 493	43 950	5.7
1944	—	—	3 588 [5]	169 525	39 123	4.9
1945	9 172 [8]	1.6 [8]	3 130	147 946	36 272	4.5
1946	12 246	2.0	2 387	178 165	27 554	3.2
1947	8 514	1.2	1 799	138 771	24 446	2.8
1948	9 026	1.3	1 494	117 020	25 747	2.8
1949	7 715	1.0	1 586	160 056	26 217	2.7
1949 : May	4 844	0.7	1 474	163 239	18 636	1.9
June	2 377	0.3	1 528	151 689	19 812	2.0
July	2 010	0.3	1 570	154 925	17 964	1.8
Aug.	3 140	0.4	1 614	160 289	15 428	1.6
Sept.	4 645	0.6	1 686	164 222	15 336	1.6
Oct.	6 129	0.7	1 760	166 517	17 229	1.8
Nov	8 525	1.0	1 855	169 300	22 490	2.3
Dec.	12 039	1.6	1 896	161 006	48 191	4.9
1950 : Jan.	16 652	2.2	...	160 756	43 335	4.4
Feb.	15 686	2.0	...	162 654	39 629	4.0
Mar.	14 933	1.9	...	161 479	24 902 *	2.7 *
April	...	...	...	...	...	...
May	...	...	...	...	...	...
Persons cov. (thousands)	.		.	.	976 [9]	

For an explanation of the Roman numerals used in this table, see p. 660.

[1] Unemployment relief statistics. [2] June-Dec. [3] Jan.-June, Oct.-Dec. [4] Insurance year ended Oct. 1949. [5] Dec. [6] Since Jan. 1939, including agricultural workers. [7] Up to 1940, applicants. Introduction of an unemployment insurance scheme in 1941 ; figures for the war years are incomplete. [8] Finnmark and evacuated communes in Troms excluded during the years 1945 to 1947. [9] Average for 1949.

TABLE I. STATISTICS OF UNEMPLOYMENT *(concl.)*

Date	Europe *(concl.)*					
	Switzerland		United Kingdom			
	II	V	V			
	Unemployed (insured) [1]	Wholly unemployed	Unemployed (insured)			
			Wholly [2]		Temporarily	
	%			%		%
1937	10.0	57 949	1 324 027	8.5	205 063	1.5
1938	8.6	52 590	1 487 363	9.5	380 332	2.5
1939	6.5	36 663	1 259 559	8.0	220 765	1.5
1941	2.0	9 095	237 827 [3]	1.5	61 446 [3]	0.5
1942	1.9	8 841	110 628	1.0	8 489	—
1943	1.4	6 058	82 758	0.5	2 780	—
1944	1.6	6 533	75 613	0.5	2 316	—
1945	1.6	6 474	158 046	1.0	1 931	—
1946	1.0	4 262	390 106	2.5	4 058	—
1947	0.8	3 473	342 295	2.0	156 028	1.0
1948	0.6	2 971	325 818 [4]	1.5	8 555 [4]	—
1949	1.6	8 059	328 426	1.6	9 571	—
1949 : May	0.9	4 706	322 017	1.5	11 561	0.1
June	0.8	3 879	282 578	1.3	8 568	0.1
July	0.8	4 081	261 501	1.2	12 431	0.1
Aug.	0.8	4 734	279 740	1.3	8 325	0.1
Sept.	0.8	5 036	287 179	1.4	6 671	—
Oct.	0.9	6 414	316 435	1.5	6 827	—
Nov.	1.4	10 786	343 706	1.6	6 886	—
Dec.	3.8	17 830	352 853	1.7	7 875	—
1950 : Jan.	4.9	30 177	395 197	1.9	8 686	—
Feb.	4.2	20 440	392 753	1.9	10 605	—
Mar.	2.3	10 840	368 523	1.8	8 981	—
April	1.7	9 222	347 165	1.7	10 156	—
May	...	5 880	...	...	...	...
Persons cov. (thousands)	548 [5]	.	20 970 [6]			

Date	Oceania					
	Australia		Hawaii		New Zealand	
	IV [7]		I [8]		II	V
	Unemployed		Unemployed (estimated)		Unemployed [9]	Unemployed (registered)
	%			%		
1937	9.3	.	.	.	.	.
1938	8.7	.	.	.	.	.
1939	9.7	.	10 000	5.9	6 264 [10]	.
1941	3.7	.	6 500	3.5	2 031	.
1942	1.6	.	2 430	1.2	810	.
1943	1.1	.	1 886	0.9	405	.
1944	1.2	.	1 600	0.8	329	.
1945	1.2	.	1 500	0.7	270	.
1946	1.4	7 603	2 133	1.1	172	386
1947	1.2	6 684	2 953	1.6	47	92
1948	0.9	2 629	8 741	4.5	33	67
1949	1.9	...	25 224	12.9	48	92
1949 : May	0.8	1 196	25 670	13.2	39	100
June	.	1 151	31 846	15.9	56	187
July	.	...	25 029	12.5	73	207
Aug.	5.5	...	26 807	13.6	88	152
Sept.	.	...	31 747	16.3	62	115
Oct.	.	...	33 701	17.3	50	81
Nov.	0.8	...	33 952	17.5	51	53
Dec.	.	...	32 432	16.7	30	44
1950 : Jan.	.	...	33 451	17.3	26	39
Feb.	...	...	32 086	16.6	19	30
Mar.	.	...	29 985	15.6	12	21
April	.	...	27 969	14.6	12	36
May	...	...	...	...	...	...
Persons cov. (thousands)	761 [6]	.	195 [5]		.	.

For an explanation of the Roman numerals used in this table, see p. 660.

[1] Wholly unemployed. [2] Including casuals. [3] From the beginning of 1941 to the end of 1947, excluding persons classified as unsuitable for ordinary employment. [4] July-Dec. With the introduction in July 1948 of the National Insurance Acts, the coverage of the series has been extended to include all registered unemployed, with the exception of registered severely disabled persons unlikely to obtain work other than under special conditions. [5] Average for 1949. [6] July 1948. [7] Unemployment benefit statistics. [8] For the period 1939-1947, annual estimates : June. [9] Persons in receipt of unemployment benefit. [10] April-Dec.

TABLE II. STATISTICS OF EMPLOYMENT IN GENERAL

Indices of numbers employed

Date	AFRICA		AMERICA			
	Union of South Africa		Canada		United States	
	Europeans	Total			B.L.S. [1]	B.C. [2]
	IV (A/B)		IV (A)	I	IV (A/B)	I
	M.I.T. [3]		M.I.T.C. [3] [4]	A.M.I.T.C.	M.I.T.C.	A.M.I.T.C.
	W.S.		W.S.	W.S. [4]	W.S.	W.S. [4]
1937	100.0	100.0	100.0	.	100.0	100.0
1938	103.7	104.9	98.0	.	94.1	95.5
1939	105.5	105.8	99.8	.	98.6	98.8
1941	110.1	117.6	133.5	*98.1* [5]	117.7	108.7
1942	111.9	120.3	152.2	*98.8*	129.2	116.1
1943	112.6	116.0	161.3	*100.0*	136.9	117.6
1944	113.5	117.1	160.4	*102.7*	135.0	116.5
1945	116.1	121.2	153.5	100.0 [6]	130.4	114.1
1946	121.8	124.5	151.8	*107.5*	134.8	119.3
1947	125.3	127.0	164.7	*111.2*	141.2	125.3
1948	129.4	128.6	171.6	*112.8*	143.9	128.2
1949	133.1	134.1	172.0	*115.1*	140.0	126.8
1949 : May	133.9	135.1	170.5	.	139.1	126.8
June	134.0	135.7	174.8	*116.0*	139.4	128.8
July	133.6	135.9	175.7	.	138.6	129.0
Aug.	133.4	135.7	177 1	*119.2*	140.0	129.5
Sept.	133.2	135.7	177.2	.	141.5	128.3
Oct.	133.3	135.8	177.0	*116.8*	138.7	127.4
Nov.	133.1	135.1	176.9	.	139.3	128.5
Dec.	132.8	134.4	170.0	.	142.2	126.5
1950 : Jan.	133.0	133.6	164.1	.	137.1 [7]	123.0
Feb.	134.1	135.9	163.5	.	135.6 [7]	123.0
Mar.	134.2	138.2	164.4 [8]	.	137.6 [7]	124.3
April	...	...	...	*110.9*	139.3 [8]	126.7
May	...	...	...	.	...	129.0
Persons cov. (thousands) [9]	219	813	1 936 [8]	4 326	.../30 718	46 300

Date	AMERICA *(concl.)*				ASIA	EUROPE
	Argentina (Buenos Aires)	Colombia (Central zone)	Peru	Puerto Rico	Japan	Austria
	IV (A)	IV (B)	IV (B)	I	I	II
	I.T.C.	M.I.T. [3]	A.M.I.	A.M.I.T.C.	A.M.I.T.C.	A.M.I.T.C.
	W.	W.	W.	W.S. [4]	W.S. [4]	W.S.
1937	100.0	.	.	.	.	100.0
1938	102.7	100.0 [9]	.	.	.	.
1939	104.8	*94.2*	100.0	.	.	.
1941	107.1	*85.5*	*105.4*	.	.	.
1942	111.5	*95.2*	*95.6*	.	.	.
1943	116.6	*101.9*	*90.4*	.	.	.
1944	123.1	*123.9*	*86.2*	.	.	.
1945	123.0	*128.8*	*77.8*	.	.	.
1946	...	*139.9*	*74.4*	100.0 [10]	.	125.0
1947	...	...	...	*104.6*	100.0 [11]	134.6
1948	...	...	...	*105.0*	*100.0*	136.6
1949	...	...	...	*106.5*	*104.4*	137.0
1949 : May	.	.	.	*108.9*	*104.0*	137.3
June	.	.	.	*110.1*	*103.5*	138.6
July	.	.	.	*110.3*	*107.8*	139.4
Aug.	.	.	.	*106.8*	*106.8*	140.2
Sept.	.	.	.	*104.4*	*104.7*	140.9
Oct.	.	.	.	*105.1*	*105.6*	141.3
Nov.	.	.	.	*104.8*	*107.8*	140.1
Dec.	.	.	.	*104.4*	*105.9*	135.0
1950 : Jan.	.	.	.	*101.5*	*96.1*	131.2
Feb.	.	.	.	...	*97.3*	...
Mar.	.	.	.	...	*98.3*	...
April	.	.	.	...	...	...
May	.	.	.	...	...	...
Persons cov. (thousands)	.	14	212	585	34 880	1 373

I. Labour force sample surveys. II. Compulsory social insurance statistics (sickness, accidents, etc.). III. Compulsory unemployment insurance statistics. IV. Statistics of establishments : IV (A), all establishments of a given importance ; IV (B), representative sample of establishments : IV (A/B), type B series (for the recent period) linked to a type A series. V. Estimates. A. Agriculture. M. Mines. I. Industry (manufacturing industries and construction). T. Transport. C. Commerce. W. Wage earners. S. Salaried employees.

[1] Bureau of Labor Statistics. [2] Bureau of the Census. Indices up to 1939, based on estimates prepared by the Bureau of Labor Statistics. [3] Including logging. [4] Including other categories of workers in the labour force. [5] Up to 1944, the indices are based on estimates. [6] Nov. [7] Figure of persons covered relates to the date shown as base, unless otherwise specified. [8] Average for 1947. [9] May. [10] Mar. [11] Oct.

TABLE II. STATISTICS OF EMPLOYMENT IN GENERAL *(concl.)*

Indices of numbers employed

Date	Europe *(cont.)*					
	France	Germany [1]	Ireland	Luxembourg	Netherlands	Norway
	IV (A)	[2]	II	IV (A)	II	III [3]
	M.I.T.C.	M.I.T.C.	A.M.I.T.C.	M.I.T.C. [4]	M.I.T.C. [4]	A. [4] M. [4] I.T.C.
	W.S.	W.S.	W.S.	W.	W.S.	W.S.
1937	**100.0**	.	**100.0**	**100.0**	**100.0**	**100.0**
1938	102.7	.	100.2	101.7	104.3	100.0
1939	104.0 [5]	.	100.5	99.3	108.8	105.5
1941	91.7	.	96.6	.	118.2	**100.0**
1942	93.2 [5]	.	96.1	.	114.6	*102.3*
1943	97.0 [6]	.	95.9	.	109.6	*100.9*
1944	92.1	.	97.8	.	...	*97.6*
1945	93.8	.	100.5	.	...	*85.5* [7]
1946	99.0	.	106.7	88.5 [8]	117.9	*97.7*
1947	104.8	.	112.9	92.3	133.0	*104.7*
1948	107.7	**100.0** [9]	117.1	101.5	147.5	*106.4* [10]
1949	109.5	*103.0*	.	108.2	...	*108.7*
1949 : May	.	.	.	108.3	.	*107.7*
June	.	*102.5*	.	108.7	.	*109.4*
July	109.7	.	.	108.9	.	*109.3*
Aug.	.	.	.	109.3	.	*109.5*
Sept.	.	*103.7*	.	109.2	.	*109.9*
Oct.	109.9	.	.	109.2	.	*110.2*
Nov.	.	.	.	109.1	.	*110.9*
Dec.	.	*103.8*	.	109.2	.	*108.7*
1950 : Jan.	...	.	.	...	.	*109.4*
Feb.	.	.	.	...	.	*111.1*
Mar.	.	*102.2*	.	...	.	*110.5*
April	...	.	.	...	.	...
May	.	.	.	...	.	...
Persons cov. (thousands)	7 050	11 922	415	33	1 273	535 [11]

Date	Europe *(concl.)*			Oceania		
	Poland	United Kingdom [12]		Australia	Hawaii	New Zealand
	II	III [13]	V	V	I	IV (A)
	M.I.T.C.	M.I.T.C.	A.M.I.T.C.	M.I.T.C. [14]	A.M.I.T.C.	M.I.T.C.
	W.S.	W.S.	[15]	W.S.	[16]	W.S.
1937	.	**100.0** [17]	**100.0**	.	.	.
1938	.	98.3	98.4	.	.	.
1939	.	103.1	101.9	**100.0** [18]	**100.0** [17]	.
1941	.	103.1	100.5	*112.3* [6]	*110.6*	.
1942	.	104.7	101.2	*111.1*	*121.5*	.
1943	.	101.4	98.7	*110.7*	*127.8*	.
1944	.	98.0	96.8	*110.5*	*130.3*	.
1945	.	93.8	92.9	*110.8*	*133.5*	.
1946	.	98.5	98.6	*121.6*	.	.
1947	**100.0**	105.6	105.6	*131.4*	.	**100.0**
1948	*111.2*	**100.0**	**100.0**	*137.0*	*114.9*	*103.1*
1949	...	*101.1*	*101.0*	*140.8*	*105.9*	...
1949 : May	...	*101.1*	*101.0*	*141.7*	*105.3*	*105.3*
June	...	*101.1*	*101.1*	*140.4*	*105.0*	*105.0*
July	...	*101.2*	*101.1*	*134.2*	*109.3*	*104.9*
Aug.	...	*101.5*	*101.3*	*140.0*	*106.5*	*105.1*
Sept.	...	*101.6*	*101.4*	*141.9*	*101.7*	*105.4*
Oct.	...	*101.7*	*101.5*	*142.7*	*100.2*	*105.5*
Nov.	...	*102.0*	*101.7*	*143.8*	*100.1*	...
Dec.	...	*101.6*	*101.3*	*144.3*	*101.1* [9]	...
1950 : Jan.	...	*101.8*	*101.5*	*144.2*	...	...
Feb.	...	*101.7*	*101.5*	*145.3*	...	...
Mar.	...	...	*101.5*	*146.0*	...	...
April	...	...	...	...	...	...
May	...	...	...	...	...	...
Persons cov. (thousands)	2 941	16 690 [19]	13 720 [19]	1 730	160	427

For an explanation of the Roman numerals and other abbreviations used in this table, see p. 664.

[1] Federal area. [2] Labour registration statistics. [3] Before 1949, statistics of establishments. [4] Jan.-Aug. [5] Jan.-June, Sept. and Dec. [6] Annual figures; commencing 1943, average of quarterly figures, except 1944 : Mar. and Dec.; and 1945 : Mar., June and Sept. [7] Finmark and evacuated communes in Troms excluded in 1945. [8] July-Dec. [9] June. [10] Statistics of compulsory sickness insurance linked up with statistics of unemployment insurance of the preceding period. [11] Average for 1941. [12] Excluding Northern Ireland. [13] From 1937 to 1948, based on the estimated number of employed persons subject to the Unemployment Insurance Acts; since June 1948, on the estimated number of employees covered by the National Insurance Acts. [14] Including forestry, fishing and trapping. [15] From 1937 to 1948, based on the estimated total numbers in civil employment (men aged 14-64 and women 14-59) excluding indoor private domestic service; since June 1948, on all persons aged 15 and over covered by the National Insurance Acts. [16] Covering persons aged 16 and over. [17] Annual figures: June. [18] July. [19] June 1937.

TABLE III. STATISTICS OF EMPLOYMENT IN MANUFACTURING

(a) *Indices of numbers employed*

Date	AFRICA		AMERICA					
	Union of South Africa		Canada	United States	Argentina	Chile	Colombia (Bogotá)	Dominican Republic
	Europeans	Total						
	IV (A/B) [1]		IV (A)	IV (A/B)	IV (B) [2]	IV (B)	IV (B)	IV (A)
	W.S.		W.S.	W.	W.	W.	W.	W.S.
1937	100.0	100.0	100.0	100.0	100.0	100.0	.	100.0
1938	101.6	103.9	97.0	85.1	104.3	105.5	100.0 [3]	107.0
1939	101.1	104.3	98.2	94.5	108.5	108.1	*90.0*	111.8
1941	102.2	117.0	147.2	125.5	117.0	135.8 [r]	*83.1*	114.6
1942	102.6	124.5	180.5	148.3	123.6	133.7	*96.7*	123.5
1943	102.2	129.1	197.7	173.3	126.1	127.0	*105.1*	130.5
1944	103.8	137.5	196.2	168.6	131.1	125.6	*135.8*	139.3
1945	106.7	138.6	178.0	148.4	132.5	127.4 [r]	*142.6*	131.4
1946	112.8	142.5	162.8	139.7	136.9	132.0	*153.8*	...
1947	118.0	148.0	174.0	147.6	146.9	141.6	...	...
1948	122.8	156.1	179.2	146.7	...	134.0	...	...
1949	125.1	160.6	179.4*	133.8	...	137.8	...	...
1949 : May	127.0	162.9	179.3	130.7	...	137.7	.	.
June	126.8	162.7	181.3	130.8	...	137.8	.	.
July	125.7	162.1	180.4	129.4	...	137.2	.	.
Aug.	125.1	160.8	182.9	133.4	...	139.3	.	.
Sept.	124.5	159.6	182.3	135.9	...	140.1	.	.
Oct.	123.8	158.9	180.5	131.2	...	138.0	.	.
Nov.	123.2	158.4	178.8	130.3	...	139.5	.	.
Dec.	122.2	156.5	174.5	132.7	...	135.7	.	.
1950 : Jan.	122.1	154.9	173.9	132.1	...	...	.	.
Feb.	123.6	159.9	174.6	132.2 [r]	...	...	.	.
Mar.	124.1	161.4	175.0*	133.3	...	...	.	.
April	...	...	...	133.3*	...	...	.	.
May	...	...	...	...	...	...	.	.
Persons cov. (thousands)	108	270	1 046 [4]	.../8 666	.	18	4	32

Date	AMERICA *(concl.)*			ASIA			EUROPE
	Mexico	Puerto Rico	Uruguay	India [5]	Israel	Japan	Denmark
	IV (B)	I	IV (B)	IV (A)	IV (B)	IV (A/B)	IV (A)
	W.	W.S.	W.	W.	W.S.	W.	W.
1937	100.0	.	100.0	100.0	.	100.0	100.0
1938	101.2	.	100.2	103.7	.	110.1	100.2
1939	111.6	.	111.7	104.5	100.0	121.1	109.4
1941	119.3	.	120.4	128.7	*135*	128.0	104.2
1942	126.6	.	124.1	136.2	*173*	141.8	111.0
1943	129.4	.	129.4	145.4	*202*	160.7	115.9
1944	133.9	.	135.5	150.5	*192*	181.1	116.8
1945	133.8	.	133.8	157.7	*189*	.	108.7
1946	139.2	.	144.5 [r]	147.0	*180*	.	121.5
1947	136.9	100.0	149.6 [r]	...	*154*	100.0 [6]	129.5
1948	...	*98.9*	152.6	...	*132*	*92.7*	136.2
1949	...	...	...	...	*163*	*89.7*	...
1949 : May	...	*93.7*	.	.	*165*	*88.2*	.
June	...	*97.8*	...	.	*172*	*86.4*	.
July	...	*97.8*	.	.	*165*	*87.9*	.
Aug.	...	*92.6*	.	.	*166*	*85.0*	.
Sept.	...	*95.8*	...	.	*169*	*88.2*	.
Oct.	...	*97.8*	.	.	*171*	*88.9*	.
Nov.	...	*103.1*	.	.	*172*	*87.7*	.
Dec.	...	...	...	.	*172*	*88.7*	.
1950 : Jan.	...	...	.	.	...	*83.5*	.
Feb.	...	...	.	.	...	*84.0*	.
Mar.	...	...	...	.	...	*81.8*	.
April	...	...	.	.	...	...	.
May	...	...	.	.	...	...	.
Persons cov. (thousands)	105	95	56	1 676	7	4 060 [7]	167

I. Labour force sample surveys. II. Compulsory social insurance statistics (sickness, accidents, etc.). III. Compulsory unemployment insurance statistics. IV. Statistics of establishments; IV (A), all establishments of a given importance; IV (B), representative sample of establishments; IV (A/B), type B series (for the recent period) linked to a type A series. V. Estimates. W. Wage earners. S. Salaried employees.

[1] Including building. [2] Including mining. [3] May. [4] Average for 1947. [5] Former British India. [6] Oct. 1947 = 100; indices based on a monthly sample survey covering wage earners and salaried employees. [7] Oct. 1947.

TABLE III. STATISTICS OF EMPLOYMENT IN MANUFACTURING *(cont.)*

(a) *Indices of numbers employed* (concl.)

Date	Europe *(cont.)*						
	Finland	France	Germany[1]	Ireland	Italy	Netherlands	
	IV(B)	IV (A)	[2]	IV (A/B) [2]	IV (A)	II	IV (B)
	W.	W.S.	W.S.	W.S.	W.	W.S.	W.
1937	**100.0**	**100.0**	.	**100.0**	.	**100.0**	.
1938	102.9	103.2 [4]	.	100.1	.	103.2	.
1939	93.6	105.4	.	101.4	.	109.3	.
1941	**100.0** [5]	90.3	.	96.3	.	113.2	.
1942	*95.7*	96.0 [6]	.	92.6	.	108.8	.
1943	*96.1*	90.9 [7]	.	93.3	.	98.3	.
1944	*90.9*	90.9	.	95.5	.	.	.
1945	*108.2*	90.4	.	101.5	.	.	.
1946	*114.3*	98.0	.	110.4	.	113.1	*85.3*
1947	*122.6*	106.3	.	117.9	**100.0**	134.1	**100.0**
1948	*129.2*	110.3	**100.0** [8]	124 0	*98.3*	150.1	*109.9*
1949	*129.9*	112.7	*110.9*	127.4	*97.1*	...	...
1949 : May	.	.	.	.	*97.7*	.	.
June	.	.	*109.5*	.	*97.4*	.	*113.8*
July	*130.3*	112.9	.	.	*96.9*	.	.
Aug.	.	.	.	.	*98.9*	.	.
Sept.	.	.	*110.9*	128.2	*99.3*	.	*116.2*
Oct.	*131.0*	112.9	.	.	*97.5*	.	.
Nov.	.	.	.	.	*95.8*	.	.
Dec.	.	.	*112.8*	.	*95.2*	.	...
1950 : Jan.	*131.4*	...	.	.	...	.	.
Feb.	.	.	.	.	...	.	.
Mar.	.	.	...	...	...	.	...
April	...	...	.	.	...	.	.
May	.	.	.	.	...	.	.
Persons cov. (thousands)	74 [9]	3 500	4 842	100	1 724	625	522

Date	Europe *(concl.)*				Oceania		
	Norway	Sweden	Switzerland	United Kingdom [10]	Australia	New Zealand	
	III [3] [11]	IV (A/B) [3]	IV (B) [12]	III [13]	IV (A/B)	IV (A)	IV (A)
	W.	W.	W.	W.S.	W.S.	W.	W.S. [14]
1937	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	.
1938	97.3	101.3	99.7	92.8	104.5	99.7	.
1939	100.2	105.1	98.3	99.4	105.7	105.8	.
1941	**100.0**	102.4	107.9	108.4	129.5	116.3	.
1942	*102.4*	108.1	109.6	113.4	139.0	113.5	.
1943	*103.2*	111.4	104.9	112.3	144.0	116.7	.
1944	*101.2*	112.5	99.7	107.1	141.9	121.0	.
1945	*93.5*	118.8	109.6	98.2	137.5	124.9	.
1946	*110.6*	123.5	122.9	94.7	145.0	130.4	.
1947	*124.1*	124.4 [15]	133.0	102.0	153.1	136.8	**100.0**
1948	**100.0** [16]	125.5	135.1	**100.0**	159.9	...	*102.7*
1949	*106.2*	126.3	126.6	*102.2*	161.7	...	...
1949 : May	*106.1*	126.5	.	*101.8*	164.1	.	*105.1*
June	*107.1*	.	127.7	*101.8*	160.7	.	*105.9*
July	*105.3*	125.6	.	*101.7*	146.2	.	*106.5*
Aug.	*105.3*	125.6	.	*102.2*	160.4	.	*106.8*
Sept.	*106.9*	126.1	126.6	*102.5*	163.1	.	*107.0*
Oct.	*107.6*	127.1	.	*103.0*	164.6	.	*107.1*
Nov.	*107.9*	127.7	.	*103.6*	165.5	.	...
Dec.	*106.6*	125.7	123.2	*103.3*	165.0	.	...
1950 : Jan.	*107.0*	125.7	.	*103.8*	165.8	.	...
Feb.	*109.2*	126.3	.	*103.9*	167.5	.	...
Mar.	*109.2*	127.0	120.9	...	168.8	.	...
April	...	126.8	.	...	...	.	...
May	...	...	.	...	...	.	...
Persons cov. (thousands)	184 [9] /254 [16]	528	352 [17]	6572/7847	519	85	144

For an explanation of the Roman numerals and other abbreviations used in this table, see p. 666.

[1] Federal area. [2] Labour registration statistics. [3] Including mining. [4] Jan.-Aug. [5] Commencing 1941, the figures relate to an increased number of establishments. [6] Jan.-June, Sept. and Dec. [7] Annual figures, commencing 1943, averages of quarterly figures, except 1944 : Mar. and Dec.; and 1945 : Mar., June and Sept. [8] June. [9] Average for 1941. [10] Excluding Northern Ireland; annual figures, June. [11] Before 1941, statistics of establishments; since Mar. 1948, statistics of compulsory health insurance. [12] Including building. [13] From 1937 to 1948, based on the estimated number of employed persons in manufacturing subject to the Unemployment Insurance Acts; since June 1948, on the estimated number of employees covered by the National Insurance Acts. [14] Including working proprietors. [15] In 1946 the criterion for inclusion was changed to a minimum of 5 persons occupied in the establishment. [16] Mar. 1948. [17] Average for 1948.

TABLE III. STATISTICS OF EMPLOYMENT IN MANUFACTURING *(concl.)*

(b) *Indices of total hours worked*

Date	America		Asia	Europe	
	United States [1]	Argentina	Israel [2]	Denmark	Finland
	IV (A/B)	IV (B) [3]	IV (B)	IV (B)	IV (B)
	W.	W.	W.S.	W.	W.
1937	100.0	.	.	100.0	100.0
1938	78.5	.	.	99.4	104.9
1939	92.3	.	100.0	107.7	93.7
1941	131.4	.	*142*	94.2	100.0 [4]
1942	161.8	.	*183*	101.5	*97.7*
1943	195.4	100.0	*220*	106.5	*99.4*
1944	190.9	*103.4*	*211*	107.7	*93.9*
1945	161.3	*99.1*	*210*	94.3	*110.1*
1946	141.9	*99.8*	*198*	115.0	*114.5*
1947	154.5	*106.7*	*173*	123.0	*123.1*
1948	152.4	...	*146*	132	*131.5*
1949	135.8	...	...	138*	*129.9*
1949 : May	130.7	...	*186*	144	.
June	131.5	...	*188*	138	.
July	130.0	...	*179*	102	*124.1*
Aug.	135.1	...	*182*	137	.
Sept.	139.4	...	*192*	146	.
Oct.	134.9	...	*192*	146	*133.3*
Nov.	132.0	...	...	146	.
Dec.	137.2	...	...	150	.
1950 : Jan.	135.8[r]	...	...	145	*134.5*
Feb.	135.9	...	...	148	.
Mar.	137.0	...	...	152	.
April	137.0*	...	...	156	*137.2*
May	...	...	...	...	.
Persons cov. (thousands)	.../8 666	.	7	.	74 [5]

Date	Europe *(concl.)*				
	France	Ireland [3] [6]	Italy	Norway [3]	Sweden [3]
	IV (A)	IV (A)	IV (A)	IV (A)	IV (A)
	W.S.	W.	W.	W.	W.
1937	100.0	100.0	.	100.0	100.0
1938	99.1 [7]	99.3	.	98.1	99.7
1939	106.1	101.1	.	100.8	104.1
1941	84.5	93.6	.	99.1	98.0
1942	97.2 [8]	88.2	.	97.6	104.3
1943	100.5 [9]	90.5	.	96.6	107.9
1944	95.8	94.0	.	91.6	110.0
1945	94.2	103.6	.	85.7	108.7 [10]
1946	105.1	115.0	.	108.9	122.3
1947	117.4	121.7	100.0	123.7	121.8 [11]
1948	121.8	...	*96.5*	131.6	...
1949	122.1	...	...	...	...
1949 : May	.	.	*102.4*	.	.
June	.	.	*97.0*	.	.
July	122.4	.	*99.7*	.	.
Aug.	.	.	*81.1*	.	.
Sept.	.	.	*102.1*	.	.
Oct.	122.7	.	*104.1*	.	.
Nov.	.	.	*93.7*	.	.
Dec.	.	.	...	.	.
1950 : Jan.	...	.	...	.	.
Feb.	.	.	...	.	.
Mar.	.	.	...	.	.
April	...	.	...	.	.
May	.	.	...	.	.
Persons cov. (thousands)	3 500	100	1 724	144	536

For an explanation of the Roman numerals and other abbreviations used in this table, see p. 666.

[1] Calculated by the I.L.O. by multiplying the index of numbers employed by the index of hours worked per worker. [2] Total number of days worked. [3] Including mining. [4] Commencing 1941, the figures relate to an increased number of establishments. [5] Average for 1941. [6] Week in Oct. of each year. [7] Jan-Aug. [8] Jan.-June, Sept. and Dec. [9] Annual figures commencing 1943, averages of quarterly figures, except 1944 : Mar. and Dec. ; and 1945 : Mar., June and Sept. [10] Figure for 1945 affected by strikes in the engineering industry. [11] In 1946 the criterion for inclusion was changed to a minimum of 5 persons occupied in the establishment.

Cost of Living and Food Prices

Country	Africa							America	
	Egypt	French Equatorial Africa	Northern Rhodesia	Southern Rhodesia	Sudan	Tunis	Union of South Africa	Canada	United States
Town or no. of localities	Cairo	Brazzaville [1]	Whole country	5	Omdurman [2]	Tunis	9	64-11	56-34
Original base (=100)	June-Aug. 1939	Oct. 1938	Aug. 1939	Aug. 1939	1938	1938	1938	1935-1939	1935-1939
Cost of living									
Composition of the index	*a-e*	*a-e*	*a-d*	*a, b, d* [3]	*a-e*	*a* [4]	*a-e*	*a-e*	*a-e*
1937	.	.	.	100	.	.	100	100	100
1938	.	100 [5]	.	101	100	.	104	101	98
1939	100 [6]	.	100 [7]	100	*100*	.	104	100	97
1940	*113*	.	.	101	*110*	.	107	104	98
1941	*138*	.	.	105	*130*	.	112	110	102
1942	*184*	.	.	111	*151*	.	122	116	113
1943	*242*	.	*119* [8]	117	*173*	.	129	117	120
1944	*279*	.	*123*	122	*172* [9]	.	133	117	122
1945	*293*	*307* [5]	*126*	124	*164*	.	137	118	125
1946	*287*	*377*	*129*	129	*177*	.	139	122	136
1947	*279*	*518*	*138*	132	*215*	.	145	134	155
1948	*281*	*740*	*142*	141	*272*	.	153	153	167
1949	...	...	*148*	150	...	.	159	159	165
1949 : April	*279*	...	*149*	148	...	.	158	157	165
May	*276*	.	*149*	150	...	.	160	158	165
June	*275*	.	*149*	150	...	.	160	159	165
July	*274*	...	*149*	149	...	.	159	160	164
Aug.	*273*	.	*149*	149	...	.	159	161	164
Sept.	*275*	.	*149*	149	...	.	159	160	165
Oct.	*278*	...	*149*	150	...	.	159	160	164
Nov.	*281*	.	*149*	156 [10]	...	.	159	160	164
Dec.	*281*	.	*150*	159	...	.	160	160	163
1950 : Jan.	*282*	...	*150*	159	...	.	160	159	163
Feb.	...	.	*151*	159	...	.	161	160	162
Mar.	...	.	*151*	160	...	.	162	162	163
April	...	...	*152*	160	...	.	...	162	163
Food									
	[11]			[12]					
1937	.	.	.	.	.	.	100	100	100
1938	.	100 [5]	.	.	100	100	105	101	93
1939	100 [6]	.	100 [7]	100 [7]	*103*	.	104	97	90
1940	*112*	.	.	.	*111*	*122*	107	102	92
1941	*141*	.	.	*110*	*130*	*152*	115	112	100
1942	*194*	.	.	*116*	*138*	*190*	127	123	118
1943	*263*	.	*120* [8]	*120*	*139*	*327*	138	127	131
1944	*312*	.	*126*	*123*	*144*	*450*	144	127	129
1945	*327*	*310* [5]	*135*	*127*	*156*	*512*	147	129	132
1946	*312*	*381*	*140*	*132*	*181*	*766*	151	136	152
1947	*299*	*524*	*151*	*144*	*229*	*1 115*	159	155	184
1948	*298* [9]	*760*	*160*	*163*	*283*	*1 672*	164	189	200
1949	...	...	*171*	*173*	...	*2 124*	169	197	192
1949 : April	*307*	...	*171*	*175*	...	*1 974*	169	192	193
May	*302*	.	*172*	*175*	...	*1 955*	172	193	192
June	*300*	.	*172*	*172*	...	*2 024*	174	197	194
July	*298*	...	*171*	*167*	...	*2 069*	169	201	192
Aug.	*300*	.	*171*	*165*	...	*2 123*	169	203	192
Sept.	*302*	.	*170*	*165*	...	*2 191*	170	201	194
Oct.	*308*	...	*170*	*166*	...	*2 316*	169	199	191
Nov.	*313*	.	*170*	*188* [10]	...	*2 319*	169	197	191
Dec.	...	.	*172*	*195*	...	*2 255*	169	196	187
1950 : Jan.	...	...	*173*	*192*	...	*2 229*	171	193	186
Feb.	...	.	*175*	*189*	...	...	172	195	185
Mar.	...	.	*175*	*192*	...	...	175	198	186
April	...	...	*177*	*194*	...	...	...	198	187

Composition of the indices: *a* = Food; *b* = Fuel and light; *c* = Clothing; *d* = Rent; *e* = Miscellaneous.

[1] Europeans. [2] Sudanese. [3] Since July 1941, *a-e*. [4] Retail price index; including heating, lighting and soap. [5] Oct. [6] June-Aug. [7] Aug. [8] Average calculated for a period of less than one year. [9] As from Jan. 1944, the index is calculated on a slightly different basis. [10] Calculated with "seasonal movements eliminated". [11] Up to 1945, including heating and soap. [12] Up to June 1941, including heating and lighting.

INDEX NUMBERS OF COST OF LIVING AND FOOD PRICES *(cont.)*

Country	America *(cont.)*						
	Bolivia	Brazil	British Guiana	British Honduras	British West Indies		
Town or no. of localities	La Paz	São Paulo	George-town	Belize	Barbados	Jamaica (Kingston)	St. Vincent
Original base (=100)	Dec. 1936	1939	Mar.-Dec. 1938	Sept. 1939	Sept. 1939	Aug. 1939	Aug. 1939
Cost of living							
Composition of the index	*a-e*	*a-e*	*a-e*	*a-e*	*a-e*	*a-e*	*a-e*
1937	100	.	.	.	.	.	.
1938	131	.	100 [1]	.	.	.	.
1939	162	100	.	100 [2]	100 [2]	100 [2]	100 [2]
1940	218	*105*	.	.	*120*	*120*	.
1941	278	*117*	.	.	*130*	*135*	.
1942	361	*130*	*160* [4]	*135* [3]	*151*	*152*	*166* [4]
1943	441	*150*	*163* [4]	*151* [3]	*165*	*157*	*179*
1944	470	*191*	*160*	*155* [3]	*178*	*159*	*184*
1945	496	*232*	*159*	*166* [3]	*187*	*159*	*188*
1946	533	*276*	*174*	*169* [3]	*207*	*165*	*194*
1947	642	*328*	*186*	*206* [3]	*226*	*195*	*208*
1948	718	*361*	*197*	*210* [3]	*232*	*235*	*223*
1949	...	*359*	...	*204* [4]	*229*	*246*	*220*
1949 : April	758	*362*	*204*	*205*	*230*	*246*	*220*
May	765	*365*	*204*	.	*226*	*245*	*219*
June	766	*362*	*203*	.	*227*	*244*	*218*
July	765	*357*	*205*	*204*	*229*	*242*	*218*
Aug.	766	*357*	*206*	.	*226*	*241*	*217*
Sept.	770	*356*	*207*	.	*225*	*239*	*218*
Oct.	...	*355*	...	*203*	*224*	*243*	*218*
Nov.	...	*362*	...	.	*224*	*246* [5]	*225*
Dec.	...	*365*	...	*193*	*228*	*250*	*225*
1950 : Jan.	...	*368*	...	.	*228*	*250*	*229*
Feb.	...	...	...	*204*	*230*	...	*231*
Mar.	...	...	...	*208*	*232*	...	*231*
April	...	...	...	*202*	*242*	...	*228*
Food							
1937	100	.	.	.	.	.	.
1938	124	.	100 [1]	.	.	.	.
1939	142	100	.	100 [2]	100 [2]	100 [2]	100 [2]
1940	176	*107*	.	.	*124*	*124*	.
1941	248	*121*	.	.	*132*	*133*	.
1942	316	*133*	*170* [4]	*136* [3]	*152*	*144*	...
1943	360	*153*	*164* [4]	*156* [3]	*162*	*144*	...
1944	405	*201*	*154*	*161* [3]	*164*	*139*	*172*
1945	424	*245*	*156*	*173* [3]	*165*	*143*	*175*
1946	472	*312*	*176*	*176* [3]	*176*	*154*	*182*
1947	623	*373*	*185*	*216* [3]	*213*	*177*	*193*
1948	690	*425*	*200*	*219* [3]	...	*222*	*210*
1949	...	*409*	...	*208* [3]	...	*236*	*204*
1949 : April	742	*415*	*211*	*209*	...	*230*	*204*
May	737	*421*	*213*	.	...	*239*	*204*
June	725	*414*	*210*	.	...	*237*	*201*
July	719	*405*	*211*	*208*	...	*235*	*201*
Aug.	721	*406*	*212*	.	...	*233*	*200*
Sept.	724	*403*	*212*	.	...	*230*	*200*
Oct.	...	*401*	...	*206*	...	*235*	*200*
Nov.	...	*414*	...	.	...	*241*	*210*
Dec.	...	*420*	...	*192*	...	*246*	*210*
1950 : Jan.	...	*421*	...	.	...	*246*	*214*
Feb.	...	...	...	*205*	...	...	*217*
Mar.	...	...	...	*210*	...	...	*217*
April	...	...	...	*197*	...	...	*213*

Composition of the indices : *a* = Food ; *b* = Fuel and light ; *c* = Clothing ; *d* = Rent ; *e* = Miscellaneous.

[1] Mar.-Dec. [2] Sept. [3] Aug. [4] Average calculated for a period of less than one year. [5] July.

INDEX NUMBERS OF COST OF LIVING AND FOOD PRICES *(cont.)*

Country	AMERICA *(cont.)*								
	Chile	Colombia	Costa Rica	Cuba	Dominican Republic	Guatemala	Mexico	Panama	Paraguay
Town or no. of localities	Santiago	Bogotá	San José	30	Trujillo City	Guatemala	Mexico City	Panama	Asunción
Original base (=100)	Mar. 1928	Feb. 1937	1936	July-Dec. 1937	Nov. 1941	Aug. 1946	1939	Oct. 1939-June 1940	1938
Cost of living									
Composition of the index	*a-e*	*a-e*	*a-e*	*a*	*a-e*	*a-e*	*a-c*	*a*	*a-e*
1937	100	100	100	.	.	.	100	.	.
1938	104	113	101	.	.	.	114	.	100
1939	106	118	101	.	.	.	116	.	*109*
1940	119	114	99	.	.	.	117	.	*113*
1941	137	112	102	.	100 [1]	.	121	.	*128*
1942	173	122	123	.	*120*	.	140	.	*144*
1943	201	141	158	.	*150*	.	183	.	*176*
1944	224	170	167	.	*174*	.	230	.	*193*
1945	244	189	177	.	*181*	.	247	.	*214*
1946	283	207	184	.	*202*	100 [2]	308	.	*236*
1947	378	245	210	.	*227*	*101*	348	.	*309*
1948	446	285	216	.	*229*	*108*	369	.	*412*
1949	529	304	233	.	*220*	...	389	.	*557*
1949 : April	517	307	228	.	*223*	*116*	382	.	*519*
May	523	304	231	.	*218*	*116*	384	.	*509*
June	528	305	231	.	*215*	*114*	386	.	*536*
July	531	303	235	.	*216*	*117*	395	.	*560*
Aug.	542	303	236	.	*218*	*115*	395	.	*562*
Sept.	544	303	237	.	*217*	*117*	396	.	*567*
Oct.	564	302	239	.	*215*	*125*	396	.	*605*
Nov.	571	307	242	.	*212*	*114*	397	.	*633*
Dec.	568	310	245	.	*212*	...	403	.	*643*
1950 : Jan.	569	310	247	.	*217* [2]	...	402	.	*661*
Feb.	561	323	...	.	*215*	...	400	.	*639*
Mar.	572	...	...	.	*214*	...	402	.	...
April	...	...	...	.	...	...	...	.	...
Food									
1937	100	100	100	100 [3]	.	.	100	.	.
1938	105	114	99	100	.	.	115	.	100
1939	103	121	96	94	.	.	115	.	*106*
1940	120	115	91	92	.	.	112	100	*103*
1941	137	111	95	100	100 [1]	.	115	.	*125*
1942	179	123	119	132	*117*	.	131	*153*	*137*
1943	212	145	149	151	*142*	.	168	*156*	*157*
1944	227	184	160	172	*175*	.	217	*159*	*172*
1945	242	207	181	194	*183*	.	234	*162*	*188*
1946	281	222	187	213	*210*	100 [2]	303	*175*	*223*
1947	377	266	219	249	*253*	*101*	348	*194*	*281*
1948	439	306	218	272	*241*	*112*	367	*199*	*373*
1949	504	317	221	234	*208*	...	383	*185*	...
1949 : April	483	326	217	235	*206*	*124*	377	*183*	...
May	489	320	217	239	*206*	*126*	379	*187*	...
June	500	318	216	243	*203*	*119*	381	*185*	...
July	501	313	222	248	*207*	*124*	391	*183*	...
Aug.	507	313	219	237	*210*	*122*	389	*181*	...
Sept.	514	312	220	226	*204*	*125*	390	*183*	...
Oct.	536	311	224	224	*206*	*138*	389	*182*	...
Nov.	550	316	229	221	*203*	*120*	389	*183*	...
Dec.	544	318	234	218	*200*	...	393	*182*	...
1950 : Jan.	547	320	239	219	*213* [2]	...	388	*180*	...
Feb.	531	...	...	218	*210*	...	385	*178*	...
Mar.	537	...	...	...	*207*	...	387	*176*	...
April	...	...	...	...	...	...	...	*174*	...

Composition of the indices : *a* = Food ; *b* = Fuel and light ; *c* = Clothing ; *d* = Rent ; *e* = Miscellaneous.

[1] Nov. [2] Consumers' price index ; Aug. 1946=100. [3] July-Dec.

INDEX NUMBERS OF COST OF LIVING AND FOOD PRICES *(cont.)*

Country	America *(concl.)*			Asia				
	Peru	Puerto Rico	Uruguay	Burma	Ceylon	Cyprus	India	
Town or no. of localities	Lima	6	Montevideo	Rangoon	Colombo	5	Ahmedabad	Bombay
Original base (=100) [a]	1934-36	Mar. 1941	1929	1931	Nov.1938-April 1939	Aug. 1939	Aug.1926-July 1927	July 1933-June 1934
Cost of living								
Composition of the index	*a-e*	*a-e*	*a-e*	*a-e*	*a-e*	*a-e*	*a-e*	*a-e*
1937	100	.	100	100	.	.	100	100
1938	101	.	99	99	.	.	93	100
1939	100	.	105	97	*108* [1]	100 [2]	96	100
1940	107	.	110	107	*112*	.	104	106
1941	117	100 [3]	109	122	*122*	.	114	117
1942	131	*135* [4]	112	.	*162*	*220*	150	148
1943	143	*140*	118	.	*197*	*254*	271	218
1944	164	*143*	121	.	*200*	*235*	278	224
1945	182	*146*	139	.	*221*	*232*	261	222
1946	199	*158*	153	381 [5] [6]	*229*	*245*	275	244
1947	258	*180*	177	388	*252*	*269* [6]	289	263
1948	337	*178*	180	360	*260*	*337*	319	286
1949	388	*163*	189	486	*258*	*324*	326	290
1949 : April	373	*165*	192	498	*255*	*326*	320	288
May	378	*164*	191	497	*254*	*322*	328	289
June	384	*163*	194	529	*255*	*320*	326	283
July	390	*161*	194	562	*256*	*315*	337	285
Aug.	402	*160*	192	545	*256*	*315*	334	289
Sept.	406	*160*	180	502	*256*	*316*	332	289
Oct.	405	*159*	181	457	*255*	*321*	329	290
Nov.	417	*160*	180	436	*262*	*333*	332	292
Dec.	419	*158*	181	425	*264*	*329*	328	291
1950 : Jan.	423	*158*	179	432	*271*	100 [7]	314	292
Feb.	427	*158*	180	418	*271*	*103*	329	288
Mar.	428	...	181	408	*266*	*101*	342	285
April	...	...	183	397	*266*	*102*	351	...
Food								
1937	100	.	100	100	.	.	100	100
1938	98	.	96	97	.	.	91	99
1939	92	.	102	95	*112* [1]	100 [2]	96	100
1940	101	.	107	111	*116*	.	107	110
1941	115	100 [3]	107	132	*129*	.	116	123
1942	129	*148* [4]	111	.	*185*	*224*	164	158
1943	143	*149*	118	.	*213*	*208*	315	221
1944	163	*153*	122	.	*210*	*220*	316	231
1945	182	*157*	146	.	*229*	*222*	294	238
1946	196	*179*	163	549 [5]	*234*	*245*	327	278
1947	271	*213*	202	463	*261*	*264* [6]	349	302
1948	364	*211*	197	403	*285*	*320*	362	305
1949	423	*187*	197	573	*298*	*301*	380	321
1949 : April	402	*190*	204	593	*292*	*302*	367	311
May	408	*188*	203	579	*292*	*298*	379	311
June	418	*186*	207	617	*292*	*294*	381	317
July	429	*185*	208	682	*294*	*285*	396	319
Aug.	443	*184*	204	662	*294*	*287*	390	326
Sept.	445	*184*	180	613	*296*	*292*	391	327
Oct.	442	*183*	184	539	*302*	*299*	388	328
Nov.	461	*184*	181	508	*306*	*319*	394	332
Dec.	463	*182*	181	493	*308*	*303*	380	329
1950 : Jan.	472	*181*	179	501	*321*	100 [7]	366	332
Feb.	478	*182*	180	479	*319*	*106*	391	324
Mar.	478	...	183	459	*313*	*102*	413	317
April	...	...	185	446	*310*	*104*	431	...

Composition of the indices : *a* = Food ; *b* = Fuel and light ; *c* = Clothing ; *d* = Rent ; *e* = Miscellaneous.

[1] Aug.-Dec. [2] Aug. [3] Mar. [4] June and Dec. [5] New series with base 1941 = 100, spliced by I.L.O. to old series. [6] Average calculated for a period of less than one year. [7] New retail price index ; 12 Jan. 1950 = 100.

INDEX NUMBERS OF COST OF LIVING AND FOOD PRICES *(cont.)*

Country	Asia *(cont.)*						
	Indo-China	Indonesia		Iran	Israel	Japan	Lebanon
Town or no. of localities	Saigon	Djakarta	Macassar	7	2	28	Beirut
Original base (=100)	1925	July 1938	July 1938	Mar. 1936-Mar. 1937	Aug. 1939	1948	June-Aug. 1939
				Cost of living			
Composition of the index	*a-e*	*a*	*a*	*a-e*	*a-e*	*a-e*	*a-e*
1937	100	.	.	100	.	.	.
1938	114	.	.	114	.	.	.
1939	117	.	.	121	100 [1]	.	100 [2]
1940	136	.	.	134	*118*	.	*110* [2]
1941	149	.	.	184	*141*	.	.
1942	191	.	.	326	*194*	.	*237*
1943	251	.	.	787	*232*	.	*441*
1944	384	.	.	916	*237*	.	*560*
1945	.	.	.	779	*253*	.	*607*
1946	1 825 [4 5]	.	.	698	*267*	27 [6]	*553*
1947	2 921	.	.	707	*271*	*57*	*500*
1948	3 935	.	.	775	*338*	100	*492*
1949	4 808	.	.	845	*347*	*138*	*461*
1949 : April	4 823	.	.	886	*371*	*141*	*490*
May	4 916	.	.	866	*359*	*143*	*484*
June	4 939	.	.	844	*350*	*138*	*479*
July	4 881	.	.	839	*343*	*141*	*444*
Aug.	4 834	.	.	853	*337*	*141*	*438*
Sept.	4 881	.	.	853	*329*	*140*	*422*
Oct.	4 776	.	.	842	*324*	*137*	*419*
Nov.	4 741	.	.	810	*322*	*131*	*428*
Dec.	4 764	.	.	782	*321*	*134*	*429*
1950 : Jan.	4 788	.	.	769	*320*	*136*	*425*
Feb.	4 799	.	.	759	*319*	*130*	*424*
Mar.	...	.	.	733	...	...	...
April	...	.	.	705	...	...	...
				Food			
1937	100	.	.	100	.	.	.
1938	125	100 [7]	100 [7]	112	.	.	.
1939	125	.	.	114	100 [1]	.	100 [2]
1940	147	.	.	125	*122*	.	*114* [2]
1941	149	.	.	187	*154*	.	.
1942	170	.	.	346	*238*	.	*435*
1943	210	.	.	872	*287*	.	*612*
1944	311	.	.	928	*285*	.	*663*
1945	.	.	.	774	*313*	.	*732*
1946	1 933 [4 5]	.	.	696	*334*	32 [6]	*662*
1947	3 269	*2 351*	*1 682*	703	*334*	*64*	*604*
1948	4 424	*1 310*	*1 208*	781	*435*	100	*626*
1949	...	*1 265*	*1 084*	870	...	*134*	*568*
1949 : April	5 408	*1 141*	*1 130*	932	*462*	*142*	*636*
May	5 498	*1 101*	*1 086*	896	*437*	*142*	*620*
June	5 460	*1 142*	*1 007*	857	*422*	*136*	*612*
July	5 383	*1 148*	*1 011*	854	*411*	*139*	*529*
Aug.	5 293	*1 122*	*1 086*	885	*404*	*138*	*503*
Sept.	5 242	*1 210*	*1 083*	885	*388*	*136*	*474*
Oct.	5 050	*1 255*	*1 031*	882	*380*	*130*	*476*
Nov.	5 024	*1 417*	*973*	818	*377*	*123*	*503*
Dec.	...	*1 313*	*992*	773	*375*	*125*	*516*
1950 : Jan.	...	*1 374*	*1 040*	757	*376*	*127*	*505*
Feb.	...	*1 355*	*1 060*	745	...	*123*	*507*
Mar.	...	*1 410*	*1 242*	721	...	...	...
April	...	*1 579*	*1 481*	687	...	...	...

Composition of the indices : *a* = Food ; *b* = Fuel and light ; *c* = Clothing ; *d* = Rent ; *e* = Miscellaneous.

[1] Aug. [2] June-Aug. [3] Jan. [4] New series with base Jan.-June 1939 = 100, spliced by I.L.O. to old series. [5] Mar.-Dec. [6] Average calculated for a period of less than one year. [7] July : index of the free market retail prices of 19 foodstuffs, based on the consumption in 1932 of an Indonesian family with a monthly income of fl.25-50.

INDEX NUMBERS OF COST OF LIVING AND FOOD PRICES *(cont.)*

Country	Asia *(concl.)*		Europe				
	Philippines	Thailand	Austria [1]	Belgium [2]	Denmark	Finland	France
Town or no. of localities	Manila	Bangkok	Vienna	62	200	32	Paris
Original base (=100)	1941	1938	Mar. 1938	1936-1938	1935	1935	1938
			Cost of living				
Composition of the index	*a-e*	*a-e*	*a-c, e*	*a-c, e*	*a-e*	*a-e*	*a, b*
1937	100	.	.	100	100	100	.
1938	104	100	100 [3]	104	102	103	100
1939	105	*103*	.	104	104	105	*108*
1940	110	*113*	.	.	130	125	*129*
1941	112	*133*	.	.	150	148	*150*
1942	180	*177*	.	.	156	174	*175*
1943	435	*222*	.	.	158	197	*224*
1944	150 751	*467*	.	.	160	209	*285*
1945	777	*905*	.	.	162	292	*393*
1946	585	*1 072*	.	.	161	467	*645*
1947	434	*1 247*	.	340	166	606	*1 030*
1948	408	*1 247*	.	390	170	815	*1 632*
1949	385	*1 198*	*403*	378	171	829	*1 817*
1949 : April	391	*1 237*	*363*	377	172	804	*1 757*
May	391	*1 244*	*362*	376	.	805	*1 738*
June	391	*1 208*	*416*	378	.	811	*1 726*
July	394	*1 143*	*415*	376	170	845	*1 715*
Aug.	378	*1 142*	*414*	375	.	839	*1 753*
Sept.	374	*1 166*	*419*	376	.	843	*1 827*
Oct.	373	*1 164*	*431*	373	170	858	*1 885*
Nov.	381	*1 186*	*463*	374	.	855	*1 912*
Dec.	370	*1 188*	*471*	372	.	856	*1 920*
1950 : Jan.	372	*1 175*	*463*	368	174	864	*1 910*
Feb.	378	*1 214*	*450*	370	.	870	*1 920*
Mar.	...	...	*441*	368	.	882	*1 906*
April	...	...	*442*	367	178	888	*1 922*
			Food				
1937	100	.	.	100	100	100	.
1938	104	.	100 [3]	105	104	101	100
1939	107	.	.	105	106	105	*108*
1940	112	.	.	.	129	128	*129*
1941	113	.	.	.	157	151	*149*
1942	213	.	.	.	162	177	*174*
1943	563	.	.	.	161	197	*224*
1944	255 459	.	.	.	162	200	*275*
1945	945	.	.	.	163	312	*377*
1946	727	.	.	.	163	491	*645*
1947	470	.	.	303	170	719	*1 043*
1948	437	.	.	382	173	950	*1 662*
1949	405	.	*445*	362	175	979	*1 814*
1949 : April	411	.	*389*	360	173	934	*1 738*
May	411	.	*394*	358	.	920	*1 725*
June	411	.	*481*	363	.	927	*1 715*
July	424	.	*467*	359	173	1 008	*1 704*
Aug.	398	.	*464*	359	.	994	*1 744*
Sept.	391	.	*464*	360	.	999	*1 835*
Oct.	389	.	*491*	357	175	1 033	*1 901*
Nov.	403	.	*529*	357	.	1 023	*1 930*
Dec.	380	.	*531*	355	.	1 025	*1 937*
1950 : Jan.	381	.	*511*	353	186	1 036	*1 921*
Feb.	385	.	*481*	351	.	1 040	*1 929*
Mar.	...	.	*475*	346	.	1 053	*1 920*
April	...	.	*443*	344	193	1 063	*1 942*

Composition of the indices : *a* = Food ; *b* = Fuel and light ; *c* = Clothing ; *d* = Rent ; *e* = Miscellaneous.

[1] Weighted retail price index based on schilling prices in Mar. 1938. [2] Retail price index. [3] Mar.

INDEX NUMBERS OF COST OF LIVING AND FOOD PRICES *(cont.)*

Country	Europe *(cont.)*					
	Germany		Greece	Iceland	Ireland	Italy
Town or no. of localities	Bizonal area	French zone	Athens	Reykjavik	120	62 [1]
Original base (=100)	1938		1938	Jan.-Mar. 1939	July 1914	1938
			Cost of living			
Composition of the index	*a-e*	*a-e*	*a-e*	*a-e*	*a-e*	*a-e*
1937	.	.	100	.	100	100
1938	100	100	101	.	102	108
1939	.	.	100	100 [2]	105	112
1940	.	.	111	*128*	121	131
1941	.	.	.	*160*	133	152
1942	.	.	.	*206*	147	175
1943	.	.	.	*256*	166	294
1944	.	.	.	*268*	174	1 307
1945	.	*111* [3]	1 909	*277*	173	2 723
1946	.	*125* [4]	14 625	*293*	171	3 039
1947	.	*122*	17 586	*315*	181 [5]	4 925
1948	*162* [4]	*127*	24 909	*322*	186	5 214
1949	*160*	...	28 575	*330*	188	5 291
1949 : April	*164*	*137*	28 706	*327*	.	5 438
May	*161*	*137*	28 738	*327*	186	5 433
June	*159*	...	29 783	*326*	.	5 371
July	*160*	...	27 988	*326*	.	5 222
Aug.	*157*	...	28 059	*328*	188	5 285
Sept.	*155*	...	28 759	*330*	.	5 259
Oct.	*155*	...	27 914	*337*	.	5 143
Nov.	*156*	...	28 423	*338*	188	5 156
Dec.	*156*	...	28 534	*340*	.	5 116
1950 : Jan.	*154*	...	29 914	*342*	.	5 097
Feb.	*154*	...	30 548	*347*	188	5 110
Mar.	*154*	...	30 324	...	.	5 040
April	...	...	...	...	.	...
			Food			
1937	.	.	100	.	100	.
1938	100	100	97	.	102	100
1939	.	.	95	100 [2]	104	.
1940	.	.	107	*137*	117	.
1941	.	.	.	*189*	129	.
1942	.	.	.	*264*	143	.
1943	.	.	.	*330*	159	.
1944	.	.	.	*334*	168	.
1945	.	*110* [3]	1 764	*342*	169	.
1946	.	*119* [4]	15 776	*361*	169	*3 586*
1947	.	*117*	19 511	*373*	183 [5]	*5 834*
1948	*156* [4]	*126*	29 369	*360*	188	*6 083*
1949	*165*	...	34 011	*365*	188	*6 069*
1949 : April	*168*	*143*	34 335	*359*	.	*6 302*
May	*165*	...	34 830	*359*	187	*6 297*
June	*164*	...	36 462	*357*	.	*6 192*
July	*169*	...	32 968	*357*	.	*5 946*
Aug.	*160*	...	33 162	*359*	190	*6 039*
Sept.	*158*	...	34 423	*361*	.	*6 004*
Oct.	*160*	...	32 713	*377*	.	*5 834*
Nov.	*162*	...	33 518	*378*	188	*5 850*
Dec.	*163*	...	33 021	*382*	.	*5 789*
1950 : Jan.	*160*	...	35 335	*389*	.	*5 760*
Feb.	*160*	...	36 370	*390*	188	*5 778*
Mar.	*159*	...	36 099	...	.	*5 672*
April	...	...	...	...	.	...

Composition of the indices : *a* = Food ; *b* = Fuel and light ; *c* = Clothing ; *d* = Rent ; *e* = Miscellaneous.

[1] Towns of over 50,000 inhabitants. [2] Jan.-Mar. [3] Oct. [4] Average calculated for a period of less than one year. [5] From Aug. 1947 : interim index ; composition *a-d*, spliced by I.L.O. to old series.

INDEX NUMBERS OF COST OF LIVING AND FOOD PRICES *(cont.)*

Country	Europe *(cont.)*							
	Luxembourg	Netherlands	Norway	Poland	Portugal	Spain	Sweden	
Town or no. of localities	9	6	31	Warsaw	Lisbon	50	95	
Original base (=100)	1914	1938-1939	1938	1937	July 1938-June 1939	July 1936	1935	
Cost of living								
Composition of the index	*a-c, e*	*a-e*	*a-e*	*a-e*	*a, b*	*a-e*	*a-e*	
1937	100	100	100	100	.	.	100	100 [1]
1938	103	101	103	.	100	.	102	102
1939	102	102	105	.	*101* [2]	*154* [2 3]	105	104
1940	111 [2]	117	122	.	*111*	*178*	118	118
1941	.	134	143	.	*122*	*232*	134	137
1942	.	143	152	.	*138*	*247*	144	149
1943	.	149	155	.	*154*	*246*	146	153
1944	173 [2]	153 [2]	157	.	*172*	*257*	145	153
1945	215	176 [4]	160	7 597 [2]	*188*	*275*	145	152
1946	272	192 [2]	164	9 108	*208*	*361*	145	155
1947	284	199	165	12 134	*211*	*424*	150	156
1948	302 [2]	206	164	12 849	*205*	*453*	157	166
1949	319	219	164	...	*213*	*478*	...	170
1949: April	305	218	163	...	*210*	*470*	.	170
May	306	221	164	...	*213*	*472*	.	169
June	306	223	164	...	*210*	*473*	160	169
July	331	219	164	...	*210*	*473*	.	170
Aug.	335	216	168	...	*210*	*476*	.	170
Sept.	334	216	165	...	*217*	*480*	161	170
Oct.	329	217	164	...	*219*	*489*	.	171
Nov.	327	221	164	...	*218*	*495*	.	171
Dec.	330	226	164	...	*216*	*500*	160	169
1950: Jan.	330	230	164	...	*222*	*509*	.	170
Feb.	328	234	164	...	*217*	*517*	.	170
Mar.	328	237	165	...	*215*	...	161	170
April	325	237	...	...	*225*	...	.	170
Food								
1937	100	100	100	100	.	.	100	100
1938	104	102	104	.	100	.	104	103
1939	103	103	106	.	*101* [2]	*178* [2 3]	106	107
1940	111 [2]	121	127	.	*111*	*215*	121	120
1941	.	145	152	.	*124*	*300*	138	142
1942	.	159	158	.	*141*	*318*	149	155
1943	.	161	160	.	*154*	*310*	149	153
1944	173 [2]	166 [2]	161	.	*173*	*323*	147	148
1945	209	170 [4]	163	10 946 [2]	*192*	*347*	146	146
1946	254	195 [2]	163	12 667	*217*	*491*	147	149
1947	271	213	162	15 864	*220*	*581*	155	154
1948	289	230	158	16 584	*211*	*599*	167	166
1949	321	252	156	...	*218*	*623*	...	168
1949: April	294	251	155	...	*214*	*610*	169	168
May	295	259	156	...	*217*	*614*	168	167
June	296	263	156	...	*214*	*615*	168	167
July	342	254	156	...	*213*	*614*	169	168
Aug.	351	248	165	...	*215*	*620*	.	168
Sept.	349	246	157	...	*223*	*625*	169	169
Oct.	340	246	155	...	*225*	*640*	.	170
Nov.	340	254	155	...	*224*	*650*	.	169
Dec.	346	260	155	...	*221*	*655*	169	168
1950: Jan.	...	265	155	...	*227*	*668*	.	169
Feb.	...	273	154	...	*222*	*680*	.	170
Mar.	...	277	155	...	*220*	...	169	169
April	...	276	...	...	*232*	...	.	170

Composition of the indices: *a* = Food; *b* = Fuel and light; *c* = Clothing; *d* = Rent; *e* = Miscellaneous.

[1] Consumers' price index. [2] Average calculated for a period of less than one year. [3] July 1936 = 100. [4] Sept. and Dec. [5] New series with base Jan. 1948 = 100, spliced by I.L.O. to old series.

INDEX NUMBERS OF COST OF LIVING AND FOOD PRICES *(concl.)*

Country	Europe *(concl.)*			Oceania			
	Switzerland	Turkey	United Kingdom	Australia	Fiji	Hawaii	New Zealand
Town or no. of localities	34	Istanbul	504-24	30	Suva	Honolulu	25-4
Original base (=100)	June 1914	1938	July 1914	1923-1927	Aug. 1939	Mar. 1943	1926-1930
Cost of living							
Composition of the index	*a-d*	*a-e*	*a-e*	*a-e*	*a-e*	*a-e*	*a-e*
1937	100	100	100	100	.	.	100
1938	100	100	101	103	.	.	103
1939	101	101	103	105	100 [1]	.	107
1940	110	112	119	110	.	.	112
1941	127	138	129	115	.	.	116
1942	141	232	130	125	.	.	120
1943	149	346	129	129	.	108 [2]	123 [3]
1944	152	338	130	129	*172*	*102*	123
1945	153	353	132	129	*167*	*104*	123
1946	152	341	132	131	*169*	*113*	123
1947	159	343	100 [4]	136	*191*	*128*	127
1948	164	345	*108*	148	*208*	*136*	135
1949	162	378	*111*	162	*210*	*131*	...
1949 April	162	373	*109*	.	*210*	.	.
May	162	381	*111*	161 [5]	.	.	*100* [4] [6]
June	162	388	*111*	.	.	*131*	.
July	162	381	*111*	.	*207*	.	.
Aug.	162	384	*111*	164 [5]	.	.	*101* [5]
Sept.	162	382	*112*	.	.	*134*	.
Oct.	162	381	*112*	.	*211*	.	.
Nov.	162	376	*112*	169 [5]	.	.	*102* [5]
Dec.	161	379	*113*	.	.	*127*	.
1950 : Jan.	159	383	*113*	.	*212*	.	.
Feb.	159	388	*113*	...	.	.	102 [5]
Mar.	*158* [7]	382	*113*	.	.	*126*	.
April	*158*	...	*114*	.	*212*	.	.
Food							
1937	100	100	100	100	.	.	.
1938	100	98	101	104	.	.	.
1939	102	98	101	109	100 [1]	.	.
1940	113	111	118	110	.	.	.
1941	135	141	121	111	.	.	.
1942	155	275	116	121	.	.	.
1943	163	449	119	122	.	100 [2]	.
1944	166	399	121	120	*157*	*100*	.
1945	166	407	122	121	*154*	*101*	.
1946	162	405	122	122	*157*	*117*	.
1947	171	400	100 [4]	129	*185*	*141* [3]	.
1948	177	410	*108*	148	*200*	*149*	.
1949	176	460	*114*	164	...	*144*	.
1949 : April	176	450	*108*	163	*208*	*140*	*101* [5]
May	175	465	*114*	163	.	*139*	*100*
June	176	476	*115*	164	.	*142*	*101*
July	176	471	*116*	163	...	*146*	*101*
Aug.	176	473	*116*	164	.	*147*	*104*
Sept.	177	469	*117*	165	.	*152*	*105*
Oct.	177	465	*119*	165	...	*150*	*105*
Nov.	176	457	*119*	167	.	*139*	*105*
Dec.	176	464	*120*	171	.	*134*	*104*
1950 : Jan.	173	471	*120*	171	...	*135*	*103*
Feb.	172	484	*121*	173	.	*134*	*103*
Mar.	*172* [7]	471	*121*	175	.	*133*	*103*
April	*172*	...	*122*	178	...	*131*	...

Composition of the indices : *a* = Food : *b* = Fuel and light ; *c* = Clothing ; *d* = Rent ; *e* = Miscellaneous.

[1] Aug. [2] Mar. [3] New special wartime price index with base Dec. 1942 = 100, spliced by I.L.O. to old retail price series. [4] Interim index : 200 cities ; 17 June 1947 = 100. [5] Quarterly average. [6] New consumers' price index : 21 towns ; base : Jan.-Mar. 1949 = 100. [7] Revised index ; base : 1939 = 100 (see above, p. 659). [8] Including heating. [9] Average of 8 months.

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Documents of the International Labour Conference.

Thirty-third Session, Geneva, 1950. Report III (Part I). *Summary of Reports on Ratified Conventions (Article 22 of the Constitution).* Geneva, 1950. iii+271 pp. $2.75; 16s. 6d.

— Report III (Part III). *Summary of Information concerning the Submission to the Competent Authorities of the Conventions and Recommendation Adopted by the 31st Session of the International Labour Conference (San Francisco, 1948) (Article 19 of the Constitution).* Geneva, 1950. 6 pp. 10 cents; 6d.

Part I of the report on the third item of the agenda contains the regular summary of annual reports submitted by Governments in accordance with the Constitution of the International Labour Organisation. Part III is the first to give effect to a provision of the amended Constitution which came into force in April 1948.

— Report IV (Supplement). *Industrial Relations.* Collective Agreements—Conciliation and Arbitration—Co-operation between Public Authorities and Employers' and Workers' Organisations. Geneva, 1950. 52 pp. 35 cents; 2s.

Brings up to date the analysis of the law and practice in different countries contained in the reports on the subject which were submitted to the 31st and 32nd Sessions of the Conference under the double-discussion procedure.[1] As the Conference was unable to complete the discussion at these two sessions, the item was placed on the agenda for the 33rd Session. The last chapter contains proposed conclusions on each of the three questions covered.

Thirty-fourth Session, 1951. Report IV (1). *Objectives and Minimum Standards of Social Security.* Geneva, 1950. 180 pp. 75 cents; 4s. 6d.

A preliminary report, issued under the double-discussion procedure, which after a first chapter on the character and scope of international social security regulations analyses law and practice in the different countries regarding the persons protected, medical benefits, rates and duration of cash benefits, general family benefits, conditions for right to benefit, right of appeal, financial resources and administration. The last chapter consists of a questionnaire addressed to Governments with a view to the adoption of a new general instrument to replace the existing international Conventions.

Documents of the Industrial Committees.

Petroleum Committee, Third Session, Geneva, 1950. *Social Conditions in the Petroleum Industry.* Geneva, 1950. iv+95 pp. 75 cents; 4s. 6d.

In pursuance of a resolution adopted by the committee at its second session, the Governing Body of the Office, at its 109th Session (Geneva, June-July 1949),

[1] Cf. *International Labour Review*, Vol. LX, No. 1, July 1949, p. 105.

placed the question which forms the subject of this report on the agenda of the third session of the committee. The information given, which relates more particularly to housing and to such social services as education, health services, community services and development schemes for improving the standard of living, is based partly on the results of Office missions to Iran, Iraq, Peru and Venezuela.

Special Publications.

Fourth Report of the International Labour Organisation to the United Nations. Submitted in pursuance of Article V, paragraph 2 *(a)*, of the Agreement between the United Nations and the International Labour Organisation, signed on 30 May 1946. Geneva, 1950. v+345 pp. $1.75 ; 10s. 6d.

An account of the activities of the I.L.O. from March 1949 to March 1950 and of its future programme. Besides bringing up to date the information on the topics dealt with in the preceding reports—manpower questions, social security, freedom of association and industrial relations, wages, industrial safety, agricultural labour, maritime labour, the work of the I.L.O. industrial committees, protection of children and young workers, women's work, work in non-metropolitan territories, co-operation, statistics, technical assistance, the regional activities of the I.L.O., administrative and financial questions, and the relations of the I.L.O. with the United Nations and other international organisations—it covers for the first time the activities of the I.L.O. concerning salaried and professional workers, conditions of work, and indigenous populations of independent countries, giving in each case a certain amount of background information on previous activities in this field. A special chapter is devoted to an analysis of the role of the I.L.O. in the formulation of a full employment policy.

Constitution and Rules of the International Labour Organisation. Conference edition — *Constitution et règlements de l'Organisation internationale du Travail.* Edition de la Conférence. Geneva, 1950. 75+75 pp. (bilingual). 75 cents ; 4s. 6d.

A new edition, incorporating the latest amendments to the Standing Orders of the Conference.

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A useful official summary of the working of the various departments of the Government of India during the second year of the country's independence.

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A fully documented report on the economic situation of Italy in the financial year 1948-49 ; where possible, information for the second half of 1949 is also given. The subjects covered include the structural aspects of the economy, the economic policies pursued, price and wage movements, the monetary situation, the national income, production, credit and finance. An appendix is devoted to questions of local finance and social security institutions.

COMMITTEE FOR ECONOMIC DEVELOPMENT. Research and Policy Committee. *Tax and Expenditure Policy for 1950.* A Statement on National Policy. New York, 1950. 54 pp.

CONFEDERAZIONE GENERALE ITALIANA DEL LAVORO. Ufficio Statistica. *Struttura dei monopoli industriali in Italia.* Rome, Casa Editrice Progresso, 1949. 401 pp.

An enquiry—published in time for the Second National Unitary Congress of the Italian General Confederation of Labour—into the real concentration of capital in limited companies in Italy, based on an analysis of their budgets and financial statements during the period 1939 to 1945. A preliminary survey of the links between political authorities and economic groups before the war and of the various forms of concentration is followed by a detailed study of company structure from the point of view of size, number of shareholders and degree of outside control by the State or by private groups, national or foreign. This first part of the book concludes with an assessment of the importance of the limited company in the national economy. The second part describes the monopolistic structure of five important industries : electrical, chemical, metal and engineering, textile, and food.

DEPARTMENT OF COMMERCE, United States. *Allocation of Scarce Commodities Through Voluntary Agreements.* Report by the Office of Industry Cooperation. Washington, D.C., 1949. 54 pp. 20 cents.

A summary and appraisal of the operation of United States Public Law 395, which provided for the voluntary rationing of scarce commodities and which was widely applied during 1948 and 1949.

— Office of Business Economics. *The Balance of International Payments of the United States, 1946-1948.* Washington, D.C., U.S. Government Printing Office, 1950. viii+275 pp. 55 cents.

The most recent volume in a series of studies on the international transactions of the United States, begun by the Department of Commerce in 1922. The first chapter summarises the changes in balance-of-payments patterns between the United States and major trading areas since the end of the second world war. Succeeding chapters give more detailed analyses of the international position of the United States with respect to trade in commodities and services, trade by areas, and financial transactions. The book includes two technical appendices : on concepts and definitions, and on methodology and sources.

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This new " All-India Trades and Industries " monthly publication aims at serving the needs of the Indian business community, guarding its interests by investigation, examination and study, and providing a forum for the ventilation of legitimate grievances. Besides articles on topics of current importance and editorial notes and comments, this issue contains sections on company reports, books and publications, and stock exchange review.

INSTITUTE OF BANKERS. *The Pattern and Finance of Foreign Trade.* With special reference to the City of London. A series of lectures delivered at the

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The papers read at the 36th annual session in the series of conferences on social affairs organised by the Catholic Church in France dealt with such subjects as economic power and order, monetary stability, the French economic plan, the international conditions for economic and social progress, the distribution of the national income and workers' participation in economic affairs. Considerable attention was also paid to present activities in the United Kingdom, the United States and the U.S.S.R.

SHISTER, Joseph. *Economics of the Labor Market.* Chicago, Philadelphia, New York, J. B. Lippincott Company, 1949. xxiii+590 pp.

While the author of this textbook gives substantial attention to economic analysis, he places strong emphasis on the institutional background against which more formal economics may be applied. The first two parts, setting forth a general summary of the composition of the labour force in the United States and surveying the institutions of the labour market—the trade union, management, and the Government—accordingly form a backgrund for Part 3, in which the operation of the labour market is analysed and theories of wage determination are compared with existing wage patterns. In the final chapters the author discusses more general problems of employment and income distribution in their relation to the labour movement.

TITMUSS, Richard M. *Problems of Social Policy.* History of the Second World War, United Kingdom Civil Series. London, H.M. Stationery Office and Longmans, Green and Co., 1950. xi+596 pp. 25s.

This study of social services in Great Britain deals with the impact of war upon human beings and social institutions. The author has drawn upon a mass of material, official and unofficial, which throws light on the problems facing the Committee of Imperial Defence, both in the period of threat of bombardment and during the war years when threat became actuality, with particular concentration on the topics of evacuation of mothers and children, the work of the hospital services and care of the homeless. The final chapter briefly surveys the more important developments in social policy and makes a tentative analysis of the total effects of the war on public health.

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DEPARTMENT OF COMMERCE AND AGRICULTURE, Australia. Bureau of Agricultural Economics. *Statistical Handbook of the Sheep and Wool Industry.* Canberra, A.C.T., 1949. vii+105 pp.

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MINISTÉRIO DAS OBRAS PÚBLICAS, Portugal. *Relatório da Direcção-Geral dos Serviços de Urbanização, 1948.* Lisbon. 191 pp.

A report on the first four years of operation of the Portuguese General Directorate of Town and Country Planning Services, which covers the whole country. In addition to detailed statistics showing the nature and extent of the projects undertaken, comments are given on the main economic and social features of the plan. Brief summaries in English and French are provided.

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A study, based largely on conditions in the United States, of the role of trade unions under a free enterprise system. The aims and bargaining methods of trade unions and their impact on the problems of inflation and unemployment are analysed, and possibilities for industrial democracy and workable wage-price policies are also discussed.

Protokoll über die Verhandlungen des Vereinigungs-Gewerkschaftstages der Industriegewerkschaft Nahrung-Genuss-Gaststätten für das Gebiet der amerikanisch, britisch und französisch besetzten Zonen Deutschlands in München vom 24. bis 26. Mai 1949. 1949. 272 pp.

THOMPSON, Kenneth M. *Profit Sharing : Democratic Capitalism in American Industry.* New York, Harper & Brothers, 1949. xiv+331 pp.

The main thesis of this book is that profit-sharing operating on a company level will serve to democratise capitalism by interesting labour directly in the process of profit creation and making profitable business operations a matter of concern and benefit to both management and labour. Part I is devoted to a survey of experience in profit-sharing in the United States. Labour and management attitudes towards profit-sharing and the place of profit-sharing in a private enterprise economy are analysed in Parts II and III. The various considerations which an enterprise has to bear in mind in instituting a profit-sharing programme and the alternative types on which such a programme can be based are discussed in detail

in Part IV. The fifth and concluding part is devoted to an assessment of the contribution which profit-sharing can make to mutually profitable labour-management relations.

Management.

BÖHRS, H., BRAMESFELD, E., EULER, H., and PENTZLIN, K. (editors). Schriftenreihe "Grundlagen und Praxis des Arbeits- und Zeitstudiums". Band I. *Einführung in das Arbeits- und Zeitstudium.* By Hermann BÖHRS, Erwin BRAMESFELD and Hans EULER. Munich, Carl Hanser Verlag, 1948. 108 pp.

—— Band II. *Die betriebswirtschaftlichen Grundlagen und die Grundbegriffe des Arbeits- und Zeitstudiums.* By Hans EULER. Munich, Carl Hanser Verlag, 1949. 100 pp.

—— Band III. *Praktisch-psychologischer und arbeitsphysiologischer Leitfaden für das Arbeitsstudium.* By Erwin BRAMESFELD and Otto GRAF. Munich, Carl Hanser Verlag, 1949. 93 pp.

BRITISH INSTITUTE OF MANAGEMENT. *Industry and a Minimum Wage.* By J. J. MALLON; *The Universities and Management.* By Lord LINDSAY OF BIRKER. London, 1950. 23 pp. 2s. 6d.

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CAMERA DI COMMERCIO, INDUSTRIA E AGRICOLTURA DI BOLOGNA. *Congresso Nazionale per l'Emigrazione, Bologna, 18-19-20 marzo 1949 : Atti Ufficiale.* Bologna, Anonima Arti Grafiche, 1949. cvii+309 pp. 3,000 lire.

In addition to the record of the proceedings of the Congress, this volume contains the text of the written reports submitted by a number of institutions and persons concerned with different aspects of Italian emigration, and of the resolutions and recommendations adopted.

CHAMBER OF COMMERCE OF THE UNITED STATES. Department of Manufacture. *Employment of Physically Handicapped and Older Workers.* Summary of a survey of company practices conducted jointly by the Chamber of Commerce of the United States and the National Association of Manufacturers among member companies. Washington, D.C., 1949. 27 pp.

First Report of the Local Government Manpower Committee. Cmd. 7870. London, H. M. Stationery Office, 1950. 30 pp. 6d.

NORDSTRÖM, G. Hilding. *Svensk Arbetslöshetspolitik.* Stockholm, Kooperativa Förbundets Bokförlag, 1949. 320 pp. Paper : 14.50 crowns ; cloth : 17.50 crowns.

This book describes the economic background and the experience of the employment policy that was followed in Sweden in the period between the two wars and led up to the comprehensive public and "semi-private" investment programme accepted by the country in 1945. The author points out that Sweden had the steepest rise in living standards during the period and recovered very rapidly from the depression. While this was mainly due to a variety of other factors, such as the country's natural resources and investment needs, the development and role of employment policy in buttressing the national economy against unemployment is of general interest.

OHLIN, Bertil. *The Problem of Employment Stabilization.* New York, Columbia University Press, 1949. 173 pp. $2.75.

In this book, in which a noted Swedish economist has assembled material from lectures given at Columbia University and Oxford University, the problems faced by countries with strong inflationary pressures, overemployment and serious bottlenecks in production are contrasted with the problem of general unemploy-

ment, special attention being given to investment and foreign trade policy. The author also outlines Swedish theory and experience ; he closes with a discussion of the Keynesian theories and their practical application.

UNITED STATES HIGH COMMISSION FOR GERMANY. Office of Administration. *Unemployment in Western Germany.* A graphic study. Frankfurt-on-Main, 1950. 62 pp.

UNIVERSITY OF PENNSYLVANIA. Industrial Research Department. *Industrial and Occupational Trends in National Employment, 1910-1940, 1940-1948.* By Gladys L. PALMER and Ann RATNER. Research Report No. 11. Philadelphia, 1949. x+68 pp. $1.

A study of long-term trends in the distribution of employment in the United States by industry, occupation and sex and in the labour requirements of industries, and of the relation of these trends to basic changes in the economy. The procedure used, which is described in an appendix, differs in various respects from other analyses of labour force changes and is designed to reveal some less apparent but real and significant changes in employment patterns. Thus, the 1910 Census statistics are presented in terms of the occupational and industrial group classifications used in 1940 ; the data relate to estimated employment rather than to gainfully occupied workers and the labour force ; and an attempt is made to minimise the effect of population growth and employment level changes. Further, because 1910 and 1940 were at different stages of the business cycle, comparisons are also made with 1948, a post-war year at a stage of the business cycle more nearly comparable with 1910.

Vocational Training.

BRITISH IRON AND STEEL FEDERATION. *Education and Training in the Steel Industry.* A report of a conference of Education and Training Officers in the Steel Industry, 14th-16th January, 1949. London, 1949. 59 pp. 2s. 6d.

—— A report of the Second Conference on Training in the Steel Industry, 26th-28th October, 1949. London, 1949. 52 pp. 2s. 6d.

These reports give the texts of papers read at two conferences organised by the Recruitment and Training Committee of the British Iron and Steel Federation, together with a summary of the discussions. In addition, the first report contains a sample training scheme suggested by the Committee as a guide for the establishment of training schemes for young persons in the industry.

BROPHY, John M. *Training in New York State Industries.* A Descriptive Survey of Training Programs in Upstate New York. New York State School of Industrial and Labor Relations. Research Bulletin No. 1. Ithaca, N.Y., Cornell University, 1949. 95 pp.

Presents the results of a broad investigation of training practices in 98 plants in upstate New York, decribed from different angles. Data are given concerning the extent to which training is provided by the plants (globally as well as for individual employees), the kinds of training, employee assistance in training, responsibility for training activities, training department operations, etc. The second part of the bulletin contains a brief history of training in industry and a review of selected studies on the subject.

DEPARTMENT OF LABOUR — DEPARTEMENT VAN ARBEID, Union of South Africa. Juvenile Employment Section — Jeugwerkverskaffingsafdeling. *Vocational Guidance — Beroepsvoorligting.* Summaries of Lectures given to Vocational Guidance Officers of the Department of Labour — Opsomming van Lesings aan Beroepsvoorligters van die Departement van Arbeid. Pretoria, 1949. 186 pp.

These lectures—14 in Afrikaans and 7 in English—were given in a course for newly appointed vocational guidance officers inaugurating the practical applica-

tion of a scheme for establishing a nationwide system of vocational guidance in the Union of South Africa. Each subject was covered by an expert. On the factual side they include a historical survey of work in this field in the Union; the main features of existing labour legislation; educational facilities (general, vocational, technical and special schools), and the role of the schools and the education authorities in vocational guidance services; systems of vocational guidance and placement for young workers; hostels and other welfare facilities for young workers. The remaining subjects are of an instructional nature and include employment psychology; principles, techniques and tests in guidance counselling; special problems of maladjusted and physically handicapped young persons; contacts of vocational guidance officers with employers and job seekers; unemployment as a social and economic problem; and the duties of vocational guidance officers.

Report of the Baruch Committee on Physical Medicine for period of January 1, 1948 to June 30, 1949. Chicago, 1949. xviii+188 pp.

In his foreword to this report, the Director of the Baruch Committee stresses the importance of its work in bringing about a permanent link between physical medicine and rehabilitation in the United States. Besides surveying the activities of the various agencies of the Committee and similar bodies and presenting individual reports from the teaching and research centres and projects in physical medicine which are supported by grants from the Committee, the report contains a list of motion pictures on physical medicine and rehabilitation.

RIVIERE, Maya. *Rehabilitation of the Handicapped.* A Bibliography, 1940-1946. 2 vols. New York, National Council on Rehabilitation, 1949. xx+998 pp. $10.

Annotated entries for 5,000 publications, the content of each of which is also indicated in code in the margin. An author index and extensive subject index facilitate the use of the bibliography, which also includes an annotated list of rehabilitation films.

Training Within Industry for Supervisors: Follow-up. Manchester, T.W.I. Association, North-West Region, 1950. iii+55 pp.

Reports of industrial subcommittees composed of training specialists and managers, which were set up by the British T.W.I. Association, North-West Region, to report on follow-up on T.W.I. training for supervisors in four branches of industry: textiles; heavy engineering and chemicals; oils and fats; light industries. The reports give detailed plans for the organisation and realisation of T.W.I. training in the industries concerned.

Wages and Conditions of Work.

BLEGEAN, A. *Traité de Législation Maritime.* Tome I: *Police administrative de la navigation maritime.* Tome II: *Droit civil, droit commercial maritime, droit international maritime.* A l'usage des candidats aux examens de la marine marchande. New edition. Paris, Société d'Editions Géographiques, Maritimes et Coloniales, 1950. Vol. I: 304 pp.; Vol. II: 232 pp. 1,420 francs.

Among the subjects dealt with in the first of these volumes are safety at sea and hygiene on board ship (construction, equipment, protection against fire, etc.); shipwreck and rescue; the crew (certificates of competency, technical education); rights and obligations of shipowners and masters; conditions of work and manning; seafarers' articles of agreement and pensions.

DEPARTMENT OF LABOR, United States. Wage and Hour and Public Contracts Divisions. *A Guide to the Child-Labor Provisions of the Fair Labor Standards Act (The Federal Wage and Hour Law).* Revised February 1950 on basis of Fair Labor Standards Amendments of 1949. Child Labor Bulletin No. 101. Washington, D.C., 1950. 15 pp.

— Women's Bureau. *State Laws of Special Value to Women.* Washington, 1950. Compendium: 1 page to each State.

Merchant Marine Act, 1936. Revised to January 1, 1949. Washington, U.S. Government Printing Office, 1949. 236 pp. 40 cents.

MINISTRY OF LABOUR, India. *Report of the Committee on Fair Wages, 1947.* Delhi, Manager of Publications, 1949. 43 pp. 12 annas; 1s.

This is the report of a tripartite committee (consisting of four representatives each of employers and workers and three representatives of the Government) set up by the Indian Central Advisory Council for Labour in November 1948 "to determine the principles on which fair wages should be based and to suggest the lines on which those principles should be applied" in India. Besides its main recommendation as to the limits between which the "fair wage" should vary and the factors on which it should depend, the Committee makes recommendations relating to the factors to be taken into account in fixing wage differentials, the size of the standard family to be allowed for in computing the fair wage, the extent to which compensation should be granted for changes in the cost of living and the machinery to be set up for the fixation of wages.

VOEGTLIN, Carl, and HODGE, Harold C. (editors). *Pharmacology and Toxicology of Uranium Compounds.* With a Section on the Pharmacology and Toxicology of Fluorine and Hydrogen Fluoride. 2 vols. National Nuclear Energy Series (Manhattan Project Technical Section), Division VI, Volume 1. New York, Toronto, London, McGraw-Hill Book Company Inc., 1949. xvii+1,084 pp. $10.

The primary purpose of this study, which forms one of a series prepared as a record of the research work done under the Manhattan Project and the Atomic Energy Commission in the United States, is to serve as a toxicological guide for the protection of persons handling uranium compounds and fluorine in laboratories and plants. It presents the results of comprehensive experimental studies carried out by the Division of Pharmacology of the Manhattan Department of the University of Rochester. Each chapter is illustrated by a number of tables and diagrams and concludes with a summary and in most cases a short bibliography.

Social Security; Public Health.

AMORÓS, G., Roberto. *La onchocercosis es enfermedad profesional.* Prólogo de Adrián TORRES MUÑOZ. Mexico, 1949. 44 pp.

After a historical survey of onchocercosis, this study deals in successive chapters with the geographical distribution of the disease in Mexico, its etiology, its relationship to rural work—the coffee plantation zones where it is endemic are favourable to the breeding of the insect transmitting the disease—its symptoms, diagnosis, prognosis, cure and prophylaxis, and the need for treating it as an occupational disease giving rise to compensation. Each chapter is illustrated.

BINSWANGER, Peter. *Kommentar zum Bundesgesetz über die Alters- und Hinterlassenenversicherung.* Zürich, Polygraphischer Verlag A.G., 1950. 458 pp.

The author of this commentary on the Swiss Old-Age and Survivors' Insurance Act of 20 December 1946 is chief of the competent division in the Federal Social Insurance Office. Since the Act affects all citizens and its application involves numerous officials and institutions, an authoritative explanation of its 154 sections is now very necessary, although it has not yet been in force long enough for a substantial body of interpretative decisions to have been formed. The commentary itself may be expected to help to shape these decisions.

DEPARTMENT OF LABOR, United States. Bureau of Employment Security. *Handbook on State Unemployment Insurance Laws.* Washington, D.C., 1950. 114 pp.

DEPARTMENT OF NATIONAL HEALTH AND WELFARE, Canada. Physical Fitness Division. *Here's how to do it.* Fitness and recreation "How to do it" films. A catalogue of films available in the Physical Fitness Preview Library of Films and Filmstrips. Ottawa, 1950. 97 pp.

FEDERAL SECURITY AGENCY, United States. Social Security Administration. *Temporary Disability Insurance.* Problems in Formulating a Program Administered by a State Employment Security Agency. Revised edition. Washington, D.C., 1949. 67 pp.

Discusses various elements to be included in the design of social insurance schemes for providing cash sickness benefits, when administered in combination with unemployment insurance and not accompanied by medical care benefits. The report deals with such subjects as definition of disability, benefit formula, waiting period, qualifying conditions, claims and certification procedures, position of private plans under scheme, and financing. A useful bibliography is included.

—— Bureau of Employment Security. *Duration of Benefits in Unemployment Insurance.* UI Program Letter 175. Washington, D.C., 1949. 24 pp.

———— *Railroad Temporary Disability Insurance Program.* Washington, D.C., 1949. 27 pp.

Contains an analysis of the national cash sickness benefit scheme for railway employees in the United States. Provisions of the law are summarised and an interesting description is presented of administrative activities thereunder, including processing of claims, verification of disability and wage loss, handling of maternity claims, and appeals machinery. Statistical data on operations are also shown.

KRAUS, Hertha. *Von Mensch zu Mensch : "Casework" als soziale Aufgabe.* Institut zur Förderung öffentlicher Angelegenheiten in Frankfurt am Main. Kleine Schriften für den Staatsbürger, 4. Frankfurt-on-Main, Wolfgang Metzner Verlag, 1949. 35 pp.

MINISTRY OF LAW, India. *The Workmen's Compensation Act, 1923 (VIII of 1923) (as modified up to the 15th April 1949).* Delhi, Government of India Publication Branch, 1949. iii+32 pp. 7 annas ; 8d.

RIBAS, Jacques Jean. *La sécurité sociale des étudiants.* Paris, Recueil Sirey, 1949. 16 pp.

Living Conditions.

ARMFELT, Roger. *Our Changing Schools.* A Picture for Parents. Prepared for the Ministry of Education by the Central Office of Information. London, H.M. Stationery Office, 1950. 109 pp. 2s.

A description of British education in the period of reform and expansion inaugurated by the Education Act of 1944. The characters in the narrative typify pupils, parents, teachers and others, while the numerous photographs show real schools, both primary and secondary. The village school and each type of secondary school —modern, grammar and technical—are dealt with in turn.

BURGER, Ed. Wolfgang, and GROLL, Hans. *Leibeserziehung : Grundsätzliches, Methodisches, Stoffliches.* Handbuch der Erziehung und des Unterrichts, 19. Band. Vienna, Österreichischer Bundesverlag für Unterricht, Wissenschaft und Kunst, 1949. 303 pp.

Educational Film Guide. Annual Edition, 1949. Compiled by Dorothy E. COOK and Katharine M. HOLDEN. New York, The H. W. Wilson Company, 1949. v+690 pp.

The latest and most comprehensive edition of a guide first published in 1936, which has appeared annually since 1943. Part 1 gives an alphabetic title and subject list of 7,030 films, and Part 2 a selected, classified and annotated list of 4,190 films. A certain number of vocational films are included. The guide also contains a directory of main sources (producers) and local distributors.

FEDERAL HOUSING ADMINISTRATION, United States. Housing and Home Finance Agency. *The Financing and Development of Cooperative Housing Projects under FHA Mortgage Insurance.* Questions and Answers. Washington, D.C., 1949. 15 pp.

INSTITUTE OF PACIFIC RELATIONS. International Secretariat. *Notes on Educational Problems in Communist China, 1941-47.* By Michael LINDSAY. With Supplements on Developments in 1948 and 1949 by Marion MENZIES, William PAGET, and S. B. THOMAS. New York, 1950. vi+195 pp. $2.50.

KOOPERATIVA FÖRBUNDETS ARKITEKTKONTOR. *Swedish Cooperative Union and Wholesale Society's Architects' Office.* Part I: *1935-1949*; Part II: *Housing, 1925-1949.* Stockholm, Kooperativa förbundets bokförlag, 1949. Part I: 164 pp.; Part II: 191 pp.

A well-presented and fully illustrated description of the contribution of the Swedish Co-operative Union's Architects' Office to social building design in the past 25 years. Although founded in 1924 primarily to design shops, factories, etc., for the consumer co-operative movement, the Office has also played a considerable part in the development of housing standards in Sweden. It has participated in the planning of all existing types of dwelling, largely through the two big co-operative housing organisations H.S.B. and Svenska Riksbyggen, and in some cases has planned the whole communal pattern of factories, institutional buildings, housing and recreational facilities. These two volumes form a valuable source of data on the social aspects of industrial and domestic architecture in Sweden.

Agriculture.

BUREAU OF STATISTICS, Canada. *Types of Farming in Canada.* A Co-operative Study by the Economics Division Marketing Service and the Census Division, Dominion Bureau of Statistics. By S. C. HUDSON, R. A. STUTT, Wm. VAN VLEIT and J. L. FORSYTH. Publication 825. Farmers Bulletin 157. Ottawa, Edmond Cloutier, King's Printer, 1949. 83 pp.

Co-operation.

DANENBERG, Elsie. *Get Your Own Home the Co-operative Way.* New York, Greenberg, 1949. ix+182 pp. $2.50.

A popularly written and practical description of the different types of housing co-operatives and how they may be organised and financed. A large part of the book is devoted to case studies of various co-operative housing projects in the United States.

DEPARTMENT OF AGRICULTURE, United States. Office of Foreign Agricultural Relations. *European Cooperatives as Markets for United States Farm Products.* By John H. HECKMAN. Foreign Agriculture Report No. 39. Washington, D.C., 1949. 66 pp.

As one of several studies undertaken under the provisions of the Research and Marketing Act of 1946 to determine the possibilities of broadening foreign markets for United States agricultural commodities, the Farm Credit Administration and the Office of Foreign Agricultural Relations made a survey in Europe during early 1949 of the current facilities for marketing American co-operatively produced agricultural products through co-operative channels in Europe. The report on the findings covers 10 countries and goes to show that State trading, quotas and bilateral trade agreements still limit the European co-operative organisations' international trade, although their future programmes contemplate more extensive direct purchasing from producers.

KOLBE, Kurt. *Das Liquiditätsproblem der Kreditgenossenschaften unter besonderer Berücksichtigung der Volksbanken.* Marburg, Lahn, Simons Verlag, 1950. 104 pp.

This study on the solvency problem of credit co-operatives, with special reference to the urban credit banks, is the third in a series of works issued under the auspices of the Co-operative Institute at the University of Marburg.

Report on Co-operation in Sierra Leone. Freetown, Government Printer, 1949. 23 pp. 1s.

In this report the Registrar of Co-operative Societies in Sierra Leone assesses the possibilities of co-operative organisation in relation to different aspects of the economy of the colony and outlines a programme of development. Chief stress is laid on the promotion of produce marketing co-operatives and consumer co-operatives.

Supreme Commander for the Allied Powers, Japan. General Headquarters. *Development of Agricultural Cooperatives in Japan.* By John L. Cooper. Natural Resources Section, Preliminary Study No. 36. Tokyo, 1950. 53 pp.

An account of the agricultural co-operative movement in Japan before and after the war, and the action taken by the occupation authorities to transform the movement—which during the war was entirely integrated into the State economic machine—into a voluntary and truly co-operative system. Co-operatives now play a key part in the food collection programme; the processing of farm produce by co-operatives is widespread; and in the field of credit "the co-operatives have established themselves as the farmers' primary banking agency" and "the aggregate of their deposits makes them the largest single banking system in Japan".

ERRATUM

1950 - Vol. LXI

No. 2, February. "Bibliography". Page 217, line 18: for "10 rupees" read "16 rupees".

VOLUME LXI

Contents

PRINCIPAL ARTICLES

	Page [1]
Labour Conditions in Ceylon : II	1
Vocational Rehabilitation of the Tuberculous, by H. A. DE BOER.	21
The Special Tripartite Conference concerning Rhine Boatmen : Geneva, 1949	105
The Place of Labour in the Constitution of the Italian Republic, by Ferruccio PERGOLESI	118
Supervisory Training in Belgium, by A. NICAISE	143
The Asian Regional Conference of the International Labour Organisation : Nuwara Eliya (Ceylon), January 1950	221
Wage Policy in Greece, by S. AGAPITIDES	242
National Health Insurance in Japan, by George F. ROHRLICH	337
Programmes in Aid of Family Housebuilding : "Aided Self-Help Housing", by Jacob L. CRANE and Robert E. MCCABE	367
Employment, Productivity and Incomes in New Zealand Farming, by F. R. BRAY	461
The Trade Union Movement in Belgium, by Léon DELSINNE	492
The Automatic Coupling of Railway Vehicles	585
The Technical Engineering Service of an American Trade Union, by Solomon BARKIN	609

REPORTS AND ENQUIRIES

The Economic and Social Activities of Trade Unions in Poland	49
Egypt's Rural Welfare Centres	59
Social Security in Agriculture	153, 274
National and International Measures for Full Employment	385
Erratum	583

---

[1] Pp. 1-103 : No. 1, January. Pp. 337-459 : No. 4, April.
105-220 : No. 2, February. 461-583 : No. 5, May.
221-335 : No. 3, March. 585-691 : No. 6, June.

Page[1]

Rehabilitation and Resettlement of Displaced Persons in the Indian Union 410

Employee Recreation Programmes in the United States 522

Conditions of Work of Fire Fighting Services : Hours of Duty, Rest Periods and Paid Holidays 637

STATISTICS

Explanatory Notes to the Tables on Unemployment and Employment, Cost of Living, Wages and Hours of Work 65

Introductory Notes 76, 179, 301, 427, 537, 658

Unemployment 78, 181, 303, 429, 541, 660

Employment 82, 185, 307, 433, 545, 664

Cost of Living and Food Prices 87, 190, 312, 438, 550, 669

Wages 199, 559

Hours of Work 209, 569

BIBLIOGRAPHY

I.L.O. Publications 96, 212, 321, 447, 572, 678

Other Publications 97, 212, 321, 448, 573, 679

Erratum 689

---

[1] Pp. 1-103 : No. 1, January. Pp. 337-459 : No. 4, April.
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